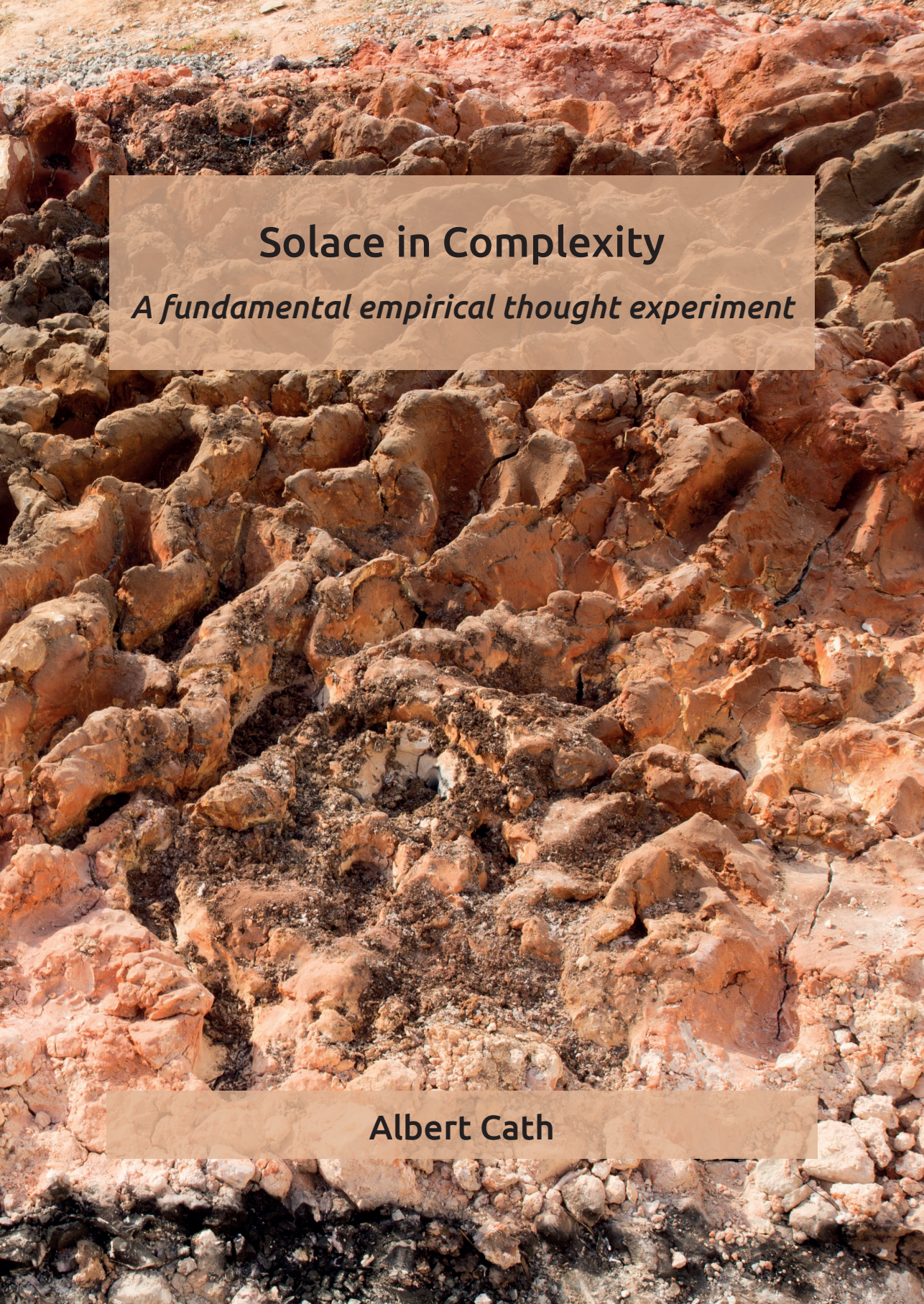

Solace in Complexity

A fundamental empirical thought experiment

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Solace in Complexity
A fundamental emperical thought experiment

Vertroosting in Complexiteit
Een fundamenteel empirisch gedachte-experiment
(met een samenvatting in het Nederlands)

Proefschrift

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Albert Gillis Cath
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For Alexandra

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Chapter 1

Preface

Here we arrive at the complexus of the complexus, to this nucleus, in a sort of way, of the complexity in which the complexities meet. At first glance, complexity arrives as fog, as confusion, as uncertainty, as an incompressible algorithm, logical incomprehension, and irreducibility. It is an obstacle, it is a challenge. Then, when one moves forward in these avenues of complexity, one realises that there are two linked nuclei, an empirical nucleus, and a logical nucleus. The empirical nucleus comprises, on the one hand, disorders, and hazards, on the other hand, complications, entanglements, and proliferative multiplications. The logical core is, on the one hand, the contradictions that we must necessarily face, and, on the other, the internal undecidabilities to logic. Complexity seems negative or regressive since it is the reintroduction of uncertainty into a knowledge that triumphantly set off to the conquest of absolute certainty. We must absolutely regret this. But the positive aspect, the progressive aspect that might have the answer to the challenge of complexity, is the departure for multidimensional thinking.

Edgar Morin (1990: 175)[1].

When managers learn to rely on models and rationality, they also learn to discount stories and emotions (that are not so easily described in term of rationality and linearity). When managers believe that the world is best dealt with through compartmentalization (reductionism), they tend to think that it is OK to deny the reality of interrelationships (or of the multiplicity of interpretations that situatedness acknowledges). When managers learn that abstract quantitative models contain "truth," they are taught that truth does not include a notion of individuality, weak signals, embodiment, or context. Managers learn these lessons not only over the one- or two-year period when they are in business school but continually in the "managerial environment" surrounding them. In simplistic formal models, managers find solace, protection from unpredictability, and an excuse not to think.

Hugo Letiche and Michael Lissack, with Ron Schultz (2011: 78).

[1] All texts in this book, originating from French or Dutch references, are translated into English by the author.

Overture

'Because I did not see it coming, nobody saw it coming' is the dominant figure of speech of our superiors. This, whether we talk about huge nasty surprises such as the 2008 financial crises, or the 2011 Fukushima nuclear catastrophe, or a minor nasty surprise as a missed market opportunity. 'It' refers to emergence. I am afraid, that in most cases, the reverse is closer to the truth. We saw it coming, or at least intuitively saw some writing on the wall, but our superiors refused to listen to our experiential stories, preferring their fixed labels. Weak, emergent signals in most cases are missed by the radars of the labels, protocols, prescriptions, directives, and recipes of managers[2]. In other words, ascribed coherence, or simply, attributing a label and rule to try to make the world predictable, predominates, while our experienced, emergent coherence tells us quite a different story (Letiche et al. 2011). The dominant narrative of mainstream management discourse denies emergence or at least disqualifies it as an annoying, superficial contamination of the followed, rationalised strategy, translated into superb plans that then are to be perfectly executed by the employees. Emergence is then perceived as the exception to the rule, the model, the protocol, the plan. At the most, a sign of our ignorance, which we must overcome by improving strategy, planning, and execution. Edgar Morin calls these courses of events the paradigm of simplicity, marked by the denial of emergence; Morin and Letiche & Lissack and others (Stacey & Mowles), propose a counter-discourse: the paradigm of complexity *marked* by emergence. The following account catches a glimpse of emergence.

> 'It takes about half an hour for a nuclear missile to travel between the population centres of Russia and the US, its warheads freighted with the end of the civilised world. At the height of the cold war, when detection systems were less sophisticated than today, there would have been as little as 15 minutes for the other side to react in. On a couple of occasions the world brushed past such a catastrophe – once in 1962 at the height of the Cuban missile crisis, when a captured Russian double agent, Oleg Penkovsky, gave Gervase Cowell, his Secret Intelligence Service handler at the British embassy in Moscow, the agreed signal that a nuclear attack was under way. Cowell, experienced and

[2] Letiche & Lissack describe the distinction between strong and weak signals as follows: 'Any concrete circumstance in which Others prove to be significant is at least partially unpredictable. We never know and cannot know what aspects of the start or initial situation may turn out to be crucial. In any situation, there are strong signals (factors that evidently are present) and there are also weak signals (factors that may be involved), which can make a crucial difference but can also remain silent. Complexity theory teaches us to try to take notice of the weak signals. The seemingly most powerful factors or forces are not always determinant; action does not follow a simple linear pattern. Complexity theory recognizes the emergent, the adjacent possible and the weak signal. The traditional mindset of organizational science tends to ignore such things, for the sake of mathematical models and spurious (rationalist) metaphors' (Letiche et al. 2011: 90).

> crafty, decided that his agent had been arrested and did not pass the message on to his superiors. Had he done so, the ambassador would have had to ring London and someone there would have had to make the fatal decision under terrible pressure of time.
>
> The other hero whose name is known to history was the Russian colonel Stanislav Petrov, the news of whose death has just reached the west. In September 1983, at a time when the Soviet military really believed that Ronald Reagan might launch a nuclear assault, Col Petrov was the only officer on duty at a control centre for the Soviet early warning satellites when the computers told him that first one, and then five more, missiles had been launched from the US towards Russia. He decided on his own authority that these were false alarms: if there was to be a first strike, he reasoned, it would have more than five missiles. So, he warned no one. An accidental Armageddon was averted. We can't know whether anyone higher up the chain of command would have made the same judgment – with less time, and under even more pressure – but both stories show that it's not just discipline that keeps nuclear weapons under control. Judgment and well-timed insubordination have sometimes saved us, too'.[3]

When I arrived at the University of Humanistic Studies (UVH) in 2005 it was (of course, amongst other things) a centre of (social) complexity thinking. 'Weak signals' had just been translated into 'slow questions' (*trage vragen*) by Harry Kunneman (Robbesom 2017) who was lecturing Edgar Morin (2008) and Hugo Letiche was focusing on his 'social complexity theory'. In my effort to understand the Letiche & Lissack book (2011) and to test the import of the ideas swirling about me, I set off to ground my understanding of social complexity theory in the tradition from which it comes, i.e. the thought of the French thinker and researcher Edgar Morin. Specifically, I wanted to see what organisational studies would look like when it was (re-)interpreted from a position aligned to Morin. And to see how the Letiche & Lissack book panned out when examined from a position aligned to Morin. Edgar Morin's life work, his multi-volume Method (1977-2004), is more epistemological than applied; while Letiche & Lissack is more applied than epistemological. Thus, my pursuit of the dialogues between the two. At the end of this book you should understand how Letiche & Lissack have radicalised Morin, and why social complexity theory --- from Morin to Letiche & Lissack --- is crucial to organisational studies. I will make the argument theoretically, but also by applying and controlling the ideas via two cases, one artistic and one organisational. I identify Morin with analysis by trilemmas and Letiche & Lissack with analysis by the four-fold dialogic square. While Morin makes attention to complexity's most crucial quality, emergence,

[3] See: https://www.theguardian.com/commentisfree/2017/sep/18/the-guardian-view-on-stanislav-petrov-an-unsung-hero, consulted 24 September 2017.

visible; the dialogic square I believe more radically and completely opens the path to the acknowledgement of emergence. I propose to see Letiche & Lissack as a further step in the direction taken by Morin --- so to speak as a fourth level in addition to the third level (above the first level of positivism and the second level of interpretivism) Morin has added to the investigation. This book is a theoretical investigation of (social) complexity ideas and their applications, which moves backwards towards theoretical origins and forwards towards much-needed applications. These considerations led to the following research question:

"Does the dialogic square offer adequate and appropriate means for acknowledging emergence (as understood in social complexity theory by Morin and Letiche & Lissack) in organisation and/or organising?"

This is a book of which the goal is to clarify the structures of understanding necessary to comprehend emergence as a key quality of complexity. 'Emergence' is difficult to understand: in practice and theoretically. The problem is that there is a fundamental epistemological paradox involved in 'understanding' emergence. Understanding normally implies one graspable truth or definition, and/or a solution; while 'emergence' connotes radical otherness – i.e. something that arrives or comes that was not there before and could not be linearly predicted. Emergence refers to radical novelty.

Edgar Morin's Method and the Letiche & Lissack complexity book study emergence by trying to describe its processes. They present 'emergence' synchronically - i.e. as some sort of system, whereby the authors fall into a sort of paradox: i.e. in their hands 'emergence' becomes one system, even though it is a system of change. But if one tries to understand emergence diachronically, as event and the stories of events, one can come close to emergence as event, but then one will have (next to) no theory. In this book, I wrestle with the paradox of trying to understand, describe, theorise, and apply emergence. It is like trying to square the circle.

Why write a book about the epistemological dilemma of emergence? I have done so because I believe these problems undermine the efforts to understand organisation and/or organising as really, ultimately, always, emergent. Thus, my first assumption: organisation and/or organising is emergence; organisational studies are the study of emergence. And because of organisational studies study emergence badly, try to ignore and/or deny it, organisational studies make a mess of it - i.e. the use of an inadequate and false epistemology dooms the field (research) to inaccurate, incomplete, and inadequate thought. At most, mainstream organisational studies address complicatedness, which tries to domesticate emergence – i.e. tries to make it a predictable entity, which is a contradiction in terms. Here another paradox is introduced: most mainstream management textbooks start and end with the observation that the world they try to describe is

complex. Managers, governors, politicians, scholars, and policymakers repeatedly state that the issue at hand is complex, while acting as if it is a complicated problem. That is one of the reasons why most mainstream organisational theories end up as old ideas parading as new ones. Albert Einstein is attributed to have said: We can't solve problems by using the same kind of thinking we used when we created them. In the phrasing of Morin: 'The obsession with simplicity has led to the scientific adventure of discoveries impossible to conceive of in terms of simplicity' (Morin 2008: 40).

The distinction between complicatedness and complex is relevant. David Kreps, drawing on Cilliers (1998), describes this distinction as follows: 'For manufacture, read complicated; for organised read complex. If a system – despite the fact that it may consist of a huge number of components – can be given a complete description in terms of its individual constituents, such a system is merely complicated. (…) In a complex system, on the other hand, the interaction among constituents of a system – and the interactions between the system and its environment – are of such a nature that the system as a whole cannot be fully understood by analysing its components' (Kreps 2015: 197; Morin 1977/1992). Complicated systems are artificial machines like cars, computers; complex systems are living machines (flora and fauna, humans) (ibid.). Letiche & Lissack confirm these notions: 'Emergence indicates the arising of patterns, structures, or properties that do not seem adequately explained by referring only to a system's pre-existing and labeled components and their interactions. Emergence is an integral part of complexity and of how the complex differs from the merely complicated' (Letiche et al. 2011: 19). Thinking complexity challenges the fixation on the object and rejects the view that context is equivalent to contamination of objectivist research, and tries to reconcile the observer with the observed. This book will elaborate on these issues, paradoxes, and concepts, and much more. In this preface, I will describe how I went about to research and reflect upon emergence, and how I proceeded. Firstly, I will pause with a brief reflection on three knowledge epistemologies for doing research. Then, I will disclose the epistemological climbing expedition I undertook to try to unveil emergence as much as possible, which will serve as a hitchhiker's guide to the reader. Next, I will shortly introduce Edgar Morin, his three complexity principles and his move from dichotomy to trilemma; followed by an introduction of the concepts of Letiche & Lissack, based on emergent coherence and the analytical framework of the semiotic/dialogic square of Self and World, which tries to understand emergent processes a bit better. Subsequently, I will discuss the method of my research casuistic and how I have proceeded.

Knowledge Epistemologies and Social Complexity

Social scientific discourse and research distinguish two epistemological streams, with different starting points, contexts, and assumptions, which sail under the prosaic colors of Mode-1 and Mode-2 (Gibbons et al. 1994; Nowotny et al. 2001/2008; Letiche & Lightfoot 2014; Regeer 2009). There are also several authors who suggest a third approach: Mode-3. See figure 1.

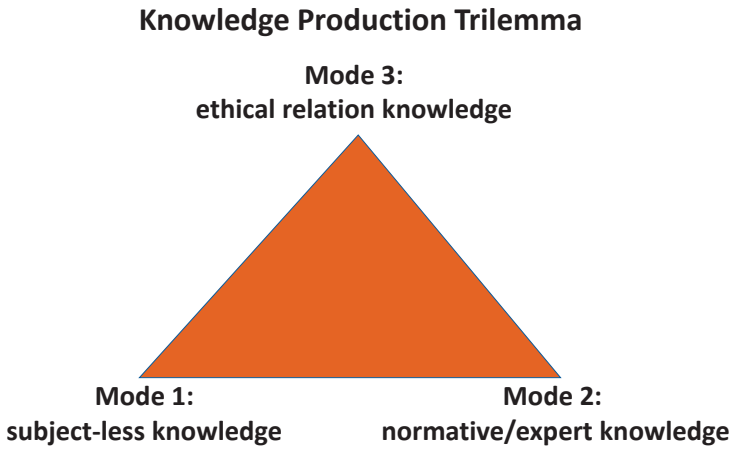


Figure 1

I elaborate on this because these different research traditions and their assumptions have many implications for research ethics and methods, the thereto related knowledge, research outcomes and the thereon based decisions. In the context of organisational studies, the different concepts and epistemological positions are often adopted unquestioned or are not mentioned. I argue that these three positions (Mode-1, -2, -3) are meaningful, certainly when social complexity, marked by emergence, is concerned.

The epistemological position of the researcher, the epistemic - institutional - culture, the place where knowledge is produced, and the thereto related research ethics, determine the relationship between the researcher and the researched object. In Mode-1, this is a distant relationship, in which a strict separation is observed between the subject (researcher) and the object (researched). This relationship, in which the researched object has nothing to say about the research methodology and conclusions, follows the epistemology of objectivism, rationalisation, consolidation, quantification, value freedom, reduction, and instrumentalism. In this position, contextualisation must be contested as much as possible, because it contaminates the research too much. This ideal of a value-free science - the absence of the researcher in his knowledge by strict separation of object

and subject, avoiding ethical and political judgment - could be justified in the 17th century (ethically/politically) by the need to escape the control of the dominant secular and religious authorities (Morin 2015: 126; Morin 1990: 116; Toulmin 1993; Nowotny et al. 2001/2008). This safeguarding (objectivism, value-free technocratic science) has, for quite some time now, become untenable in the era of entanglement (of interests) in the triad techno/science-industry-politics, as President Eisenhower already emphasised in his speech on the military-industrial-science-politics complex in 1961[4] (Nowotny et al. 2001/2008). In Mode-2, and especially in Mode-3, a restoration of the relationship between the researcher and the researched object is intended: entailing the integration of the researcher/conceptualiser in the researched object and the conceptualisation of the object, and thus attention is paid to the emergent, complex nature of this relationship (Morin 1977/1992).

Let me address the major differences between these three epistemological positions. The question then is: to what extent do these positions show respect for emergence in the relationship between subject and object? An important guideline for this relationship is the degree of [re]contextualisation (weak-strong) of that relationship in knowledge production. In the first place, there is an 'objectivity trap', in which, on the one hand, contextualisation threatens the universalism of knowledge and, on the other hand, the social world in which this knowledge operates, is excluded. According to Nowotny et al., this fixation on the decontextualised object (objectivism) is not tenable in a Mode-2 society, characterised by complex problems (Nowotny et al. 2001/2008: 50-65). Besides the financial and political pressures on the scientific communities, in the context of interwoven relations between science and society, there is above all an epistemological, ideological problem, which is reflected in the 'epistemic civil war' (Popolo 2007: 214)

[4] Eisenhower: 'This conjunction of an immense military establishment and a large arms industry is new in the American experience. The total influence -- economic, political, even spiritual -- is felt in every city, every State house, every office of the Federal government. We recognize the imperative need for this development. Yet we must not fail to comprehend its grave implications. Our toil, resources and livelihood are all involved; so is the very structure of our society. In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist. Today, the solitary inventor, tinkering in his shop, has been overshadowed by task forces of scientists in laboratories and testing fields. In the same fashion, the free university, historically the fountainhead of free ideas and scientific discovery, has experienced a revolution in the conduct of research. Partly because of the huge costs involved, a government contract becomes virtually a substitute for intellectual curiosity. For every old blackboard, there are now hundreds of new electronic computers. The prospect of domination of the nation's scholars by Federal employment, project allocations, and the power of money is ever present and is gravely to be regarded. Yet, in holding scientific research and discovery in respect, as we should, we must also be alert to the equal and opposite danger that public policy could itself become the captive of a scientific-technological elite. It is the task of statesmanship to mould, to balance, and to integrate these and other forces, new and old, within the principles of our democratic system -- ever aiming toward the supreme goals of our free society' (Public Papers of the Presidents, Dwight D. Eisenhower, 1960, p. 1035- 1040).

between Mode-1 and Mode-2 science, and the epistemic cultures in which they operate. Nowotny et al. (2001/2008) point to this epistemological struggle as a battle over the reliability of knowledge. Mode-1 science defines this in replicability terms, buttressed by a heavily rigged audit structure (peer review) – i.e. science is only science, when it is replicable and generalisable, and seen by the insiders to be so.

The question that arises, is whether this position is tenable when a complex problem is concerned: "But most will be reluctant to admit our contention that the more highly contextualised the knowledge, the more reliable it is likely to be – not necessarily within the reductionist framework of disciplinary science, which defines reliability almost exclusively in terms of replicability, but because it remains valid outside these 'sterile spaces' created by experimental and theoretical science, a condition we have described as 'socially robust'" (Nowotny et al. 2001/2008: 168). In short, a plea for an epistemology that respects complexity marked by emergence.

Mode-1 science, which also sails under the flag of 'normal science', can be summarised as the technocratic ideal of science. Mode-2 and Mode-3 science can then be understood as post-normal science. Funtowicz and Ravetz (1993) introduced the term 'post-normal science' for issue-driven knowledge production in a context of hard political pressures, values in dispute, high decision stakes, and high epistemological and ethical system uncertainties (Petersen et al. 2011: 364-365).

In Mode-1 research, the researcher is the expert, the one who knows, and the object of study is silenced. The relationship between the researcher and the researched object is strongly protocolled and codified so that objective, true, certain knowledge is ensured, whereby replicability is regarded as 'good science'. In this approach, the context of the studied object is frozen (ceteris paribus). In Mode-1, research ethics is determined by linear rationality, objectivity, and quantifiability, at the highest possible aggregation level (universalism). The focus is on generalisability at the expense of the specific (Letiche & Lightfoot 2014; Regeer 2009; Petersen et al. 2011; Funtowicz & Ravetz 1993; Morin 1990; Nowotny 2001/2008; Kincheloe 2004; Agar 2013; Boje 2001, 2008).

In Mode-2 knowledge production, a Mode-1 position is problematised. The relationship between subject and object receives attention and particularly the context of that relationship, the specifics thereof. Research takes on a transdisciplinary character, whereby the multiplicity, the polyphony of knowledge production, is emphasised. While Mode-1 predominately consists of a monologue by the researcher, Mode-2 consists of a dialogue. In Mode-2 knowledge, uncertainty is emphasised. In Mode-2, ethics are determined above all by normative professional standards. Placed in each other's perspective, Letiche & Lightfoot assert the following: 'There is an ethics of Mode-1 scientific research, centring on accuracy, providing truthful accounts, and letting others control one's work. And there is an ethics of Mode-2 professionalism, focussed on respect for participants and professional integrity. But in both cases, the primary focus is not on

ethics *per se*. By contrast, in Mode-3 ethics is the leading factor' (Letiche & Lightfoot 2014: 129-130). The ethics of the *relationship* between the researcher and researched is brought to the fore in Mode-3, which tries to break through the totalitarian hierarchy of Mode-1 knowledge production, which denies this relationship altogether. The emergent multiplicity (complex knowledge) of the relationship between subject and object can be shown narratively, which makes room for experiential knowledge – i.e. 'Mode-3 has to constantly navigate between the specific and the general, to do justice to Other while communicating. The differentiation between Mode-2 and 3 is a sliding scale in that Mode-2 can never totally get rid of the specific, while Mode-3 can never totally avoid generalization. However, the type of knowledge they want to produce is different: Mode-3 wants to describe lived existence in how it is experienced, while Mode-2 is more focussed on causality and on predicting or influencing events' (ibid.: 138).

The balancing act between Mode-1 and 2, but particularly between Mode-2 and 3, doesn't only have ethical and epistemological implications for knowledge production, but also pragmatic and existential implications, as I have often experienced in my practice. Can Cain and Abel be together in one room and be in dialogues? Can a theoretical chemist who strongly relies on Mode-1 knowledge production communicate with an anthropologist who commutes between Mode-2 and 3? A good example is the different positions Albert Einstein held regarding the atomic bomb: he participated in theorising about atomic fission (mode-1 research), but was also an ardent opponent of the use of atomic bombs (Mode-3 position). In other words, how does one breach these moments of difficulty and, in which the elephants in the room can be named?

In my research *in* practice - as a contrast to research *about* practice - a Mode-1 epistemology is untenable, in its denial of the complexity of practice through simplification (reductionism, objectivism) and its position that emergence is at most a surface phenomenon. As a researcher in the practice of others, I am part of that practice and, of my observations. The consequence of this position is that I don't employ the principle that the practice should adapt itself to theoretical concepts chosen by me and hypotheses derived thereof, but that the theoretical concepts stem from observations in the researched practice. In other words, I embrace the second-order cybernetics notion of the observer being part of the observed, and the observed being part of the observer.

I assume herewith that the simplicity paradigm embraces a Mode-1 ethics and epistemology and that the Complexity paradigm occupies at least a Mode-2 position - for pragmatic reasons - but sooner emphasises a Mode-3 epistemology and ethics. The Mode-2 position provides some solace through its respect for emergence, uncertainty, disorder, and affectivity for the problems that are at play, which the experience of complex practice shows.

I experienced that the ethical position of Mode-3, and to a lesser extent of a Mode-2 epistemology, evokes violence with the adepts of a Mode-1 epistemology. The trilemma

Mode-1-Mode-2-Mode-3 is then reduced to an 'epistemic war' between Mode-1 and Mode-2 positions. And that is regrettable, if only because Mode-3 can have a mitigating effect, as after all both Mode-1 and Mode-2 are based on a historical, ethical foundation. It is not only that new ideas always are rejected at first sight, but in the case of complexity theory, they are largely received violently, based on epistemological concerns. Henri Bergson's method of intuition and concept of duration were heavily criticised as anti-intellectualism more than a century ago (Bor 1990: 16-25). Edgar Morin's sociology of mass-culture (for example 'Les stars' Morin: 1972) and participative research in a French village (Plozévets studies: Morin 1970) in the 1960s, and later his study of complexity (Method), were put away by his peers as a 'blemish on science' (Morin 2008b; Lemieux 2009). Many other complexity theorists had to struggle with this. Thinking complexity, which requires a Mode-2 or Mode-3 flag in one's hand (see further), frequently demands to take some shelter from the Mode-1 storm, which does not accept a 'no evidence without context' position.[5] This shows the vulnerability of the third factor (Mode-3) in the knowledge production trilemma in relation to the violent dualism (Manicheism) of the dilemma, which only permits two factors (in opposite relation) amongst themselves. To sum up:

- Mode-1: simple objectivation; minimal controlled experimental contextualisation.
- Mode-2: human constructed world (pragmatism); professional context speaks back.
- Mode-3: complex ethics; ongoing emergent contextualisation.

Three strategies and positions to produce knowledge to give meaning to the same world have been touched upon. These different strategies and paradigmatic positions have significant consequences for acting in the world, as the past centuries have shown. Language, epistemological positions, nor paradigms, are innocent. The raised issues will be elaborated further in the theoretical part of this book.

[5] June 2017, The Council for Public Health and Society (Raad voor Volksgezondheid en Samenleving, RVS) published a report with the meaningful title "No evidence without context: About the illusion of evidence-based practice in healthcare". The council recommends its publication as follows: 'The emphasis in healthcare has shifted to external accountability, transparency, standardisation, and controls. Much of what is valuable in the personal relationship between client and healthcare provider is not encapsulated in the existing research methods and indicators. By making this recommendation, the RVS wants to initiate a dialogue from a different perspective about a new foundation for good health care' (see: https://www.raadrvs.nl/en/item/no-evidence-without-context, consulted 22 September 2017).
In other words, a plea for a shift from Mode-1 science towards Mode-2/3 science. In a comment on this report, Jeroen Geurts (professor in NeuroSciences and chairman of the board of governors of ZonMw/The Netherlands Organisation for Health Research and Development) notes: 'Nevertheless, a fierce storm blows in the Dutch medical world (...) the report defends the scientific methods of pluralism (...) Critics climbed into the pen. They fear that RVS wants to go back to the fact-free medicine of the past' (Jeroen Geurts, 16/17 September 2017, Fixed love for Models/Starre liefde voor modellen, *NRC Handelsblad*, page W3.

Hitchhiker's Guide to Solace in Complexity

The thread that tries to hold my quest for emergence together, is the imaginary Complexity Edifice, which Edgar Morin constructed: 'The thinking of complexity presents itself (...) as an edifice with several floors. The ground floor is formed from the theory of information, cybernetics and systems theory and contains the necessary tools for a theory of organisation. Next comes a second floor with the ideas of John von Neumann, Heinz von Foerster, Henri Atlan and Ilya Prigogine on self-organisation. To this edifice, I have wanted to bring additional elements, in particular, three principles: the dialogic principle, the principle of recursion and the hologrammatic principle' (Edgar Morin, quoted in Mialaret 2010: 130-131).

I took the liberty to move Morin's ground floor of first-order systems theory one floor up, and fit on another ground floor, that of Taylorism (Scientific Management).[6] Emergence is the central theme in this edifice, being the core concept of complexity theories. Then I took the bold liberty to, provisionally, add a fourth floor to the edifice (see figure 2).

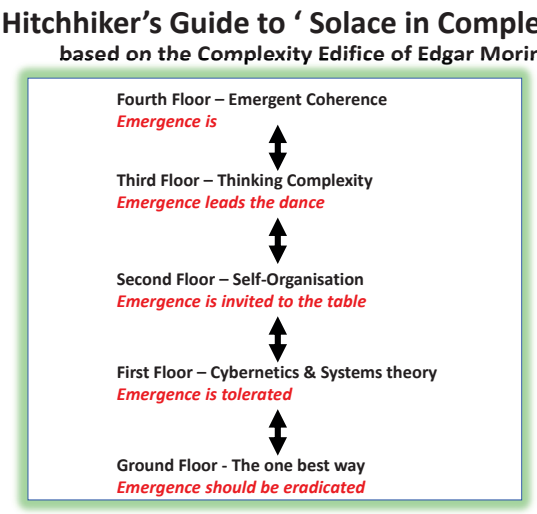


Figure 2

[6] Scientific Management (F.W Taylor) insist that management is rational, and therefore a special management class should do all the planning. Essential in this view is a strict separation between decision-making and execution (deskilling of the workforce) – i.e. 'Problems are defined, the relevant information is analysed, possible solutions are generated, and the optimal solution is decided upon and implemented' (Clegg et al. 2016: 41). Thus the 'One best Way' can be established by the superior intellect of the manager (ibid.). The principles of scientific management, formulated in 1911 by Taylor, are to date influential in mainstream management literature and practice.

In chapter 4 (simplicity), we will take the first staircase from the ground floor towards the first floor, leaving the one-dimensional, closed, mechanistic worldview of the one best way, which at most supports complicatedness and denies complexity, behind us. We will come across first order systems theory, which is founded on the two-fold logic of dilemma. Then, in chapter 5 (complexity), we will climb the next staircase towards the second floor where we will find nonlinear deterministic systems theory based on self-organisation and chaos theory, ending up on the third floor with the three-dimensional trilemmas, based on a three-fold logic, proposed by Morin, focusing on his three complexity principles. Emergence is not denied anymore, on the contrary, it is leading the dance. Finally, we will end up, in my quest for understanding emergence, on the fourth floor, which I provisionally added to Morin's Complexity Edifice. A cluttered, emergent workplace under construction. We will climb via an unstable stepladder towards the fourth floor, into the almost uncharted territory of a four-fold logic, proposed by Letiche & Lissack. They assert: Emergence is – i.e. that emergence is a fundamental ontic and ontological complexity principle: 'Humanity cannot stand outside emergence and turn it on and off at will' (Letiche et al. 2011: 105).

I will now, briefly, elaborate on a few important issues that will be raised during this climbing expedition. The mentioned concepts and frameworks are merely starters, the main course will be served after these few words of welcome. Remember, the menu is not the dish.

From Dilemma to Trilemma

Edgar Morin (1977/1992 & 2008 & 1990) follows a three-fold logic (trilemma) discussing complexity theory. Three complexity principles are in the foreground. In his six-volume study (La Méthode/Method), he develops a new vocabulary and concepts about complexity. A scientific worldview that opposes the dominant paradigm of simplicity. The paradigm of simplicity proposes a reduction of complex realities to one principle of order, which only has room for the 'either-or' nature of reality that is represented as a dichotomy (thesis versus antithesis). In this paradigm, there is a separation between subject and object, a separation between micro and macro, a separation between theory and practice, and between laboratory experiment and the real world. Simplicity also has a bias towards probabilities versus possibilities[7] and a bias towards objectivity and uni-

[7] In the wording of Sotolongo: "A logic-of-possibilities intends to capture the shaping of the 'conditions of possibility' for one or the other phenomenon to happen. It is not biased in favour of 'the probable' events, but is in favour of any 'possible' one. Thus it is better suited to apprehend the emergence of 'anything-of-

versality (Sotolongo 2007: 139-140). Simplicity makes a coercive disjunction between that which is connected (reductionism), and connects coercively diversity (holism) (Morin 2008; 1977/1992). On the one hand, people are biological beings and, on the other hand, they are social, cultural beings that are living in a polyphonic, imaginative, and conscious universe. These different realities are carefully examined separately in the various scientific disciplines. This disjunction breaks the vital link between order and disorder, between autonomy and environment, between subject and object – i.e. ambiguity, contradiction and emergence are largely denied. Complexity can be characterised by three underlying principles according to Morin (2008). Firstly, through a dialogic principle: order and disorder, self and environment deny each other, but they also collaborate to produce organisation and complexity (ibid.). The second complexity principle involves the principle of (organising) recursivity: a process in which the products and effects are at the same time the causes and producers of what they produce. Society is produced by interactions between individuals, but society, once produced, feeds back to the individuals and produces them (ibid.). Morin, thus breaks open linear causality, which marks simplicity. The third principle is a holographic principle. The part is in the whole and the whole is in the part, but they are irreducible to each other. Simplicity only looks at parts, isolated from their context (reductionism), while holism only looks at the whole, without paying attention to the parts (ibid.). The principle of holographic structure is linked to the principle of recursive causality, which is linked to the dialogic principle between order and disorder. In Morin's analysis of physical reality, biological reality and anthropological reality, the boundaries between these different aggregation levels and (scientific) disciplines matter – i.e. the different aggregation levels matter and cannot be translated into each other unproblematically. Different aggregation levels separate and simultaneously provide a place for connection and communication. The boundaries between concept, object, identity, and the environment are both a place of closure and of opening. With this, time, history, consciousness, and process are important elements of a complexity vision on reality. Morin's complexity concepts involve a coupled method: open on the one hand (integration of history and process) and closed on the other hand, specifically through the description of complex units. The system, described as an all-encompassing term for the generic (holism), is broken open by the integration of novelty (ibid.). This shows the importance of reflexivity: "Reflexivity is the quality belonging to every social system to change itself through new strategy assessment based on the knowledge that the system has just received. This means that previous knowledge about the same system may have lost its validity. Reflexivity is the mirror of human freedom. If it were possible to capture the behavior of social systems in

the-other- sort' with respect to the prevailing realities, thus, helping not to lose sight of the time limits – historical ones – of such systems" (Sotolongo 2007: 139).

classical scientific regularities, that same system would be completely determined and by that would be without freedom. (...) Social reality has become fundamentally unpredictable by the occurrence of reflexivity' (Roel In 't Veld 2010: 35). Morin describes this as 'knowledge with consciousness' and thereby takes an ethical view (Morin 1990, 2004). The interaction between order and disorder (noise, contradiction, ambiguity) creates the possibility of organisation. In Morin's (social) complexity conceptualisation, the individual and the specific cannot dissolve in the generic, which is complete, but at the same time is also part of it: diversity in unity, unity in diversity - i.e. Unitas Multiplex (Morin 1977/1992). In the paradigm of simplicity, there are always holes in the fence, being in sight of possible complex worlds. Morin shows the importance of order and disorder in relation to social organisation. Order and disorder and social organisation have triple complex relationships. This is shown in the following trilemma (ibid.: 47). See figure 3.

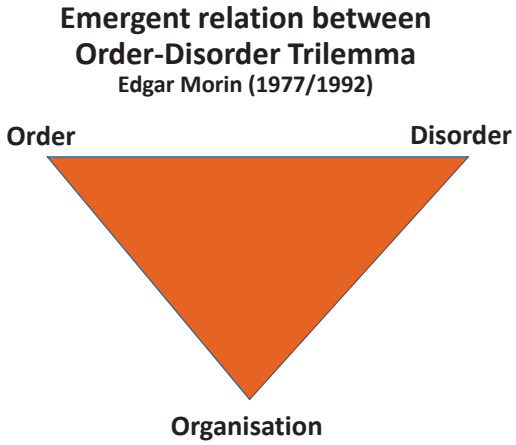


Figure 3

Social Organisation that denies disorder as a possible constitutive, generative force, can slip away in a sterile, homogeneous system in which no change or novelty is possible. Complete disorder threatens a social organisation. Emergent interaction between order and disorder allows social organisation that is open to change and opportunities. It is therefore important to pay attention to stories, and knowledge contained in them, within a social organisation in relation to the formal narratives (e.g. business plan) of social organisation. In short, we need to show the connection between foreground and background as much as possible. And that brings me to the complexity concepts of Letiche & Lissack.

From Trilemma to a Four-fold Logic

The four-fold logic of Letiche & Lissack (2011), presented in the semiotic/dialogic square of Self and World, tries to reveal emergent processes by providing a guide for active dialogues that respects lived or experienced narrative – i.e. to put lived speech (parole) in the foreground. The dialogic square of Self-Group-Environment-Emergence adds a fourth factor to Morin's trilemmas, and thus destabilises them further. I will focus in this book on two important complexity concepts of Letiche & Lissack that relate to emergence: coherence, and the dialogic square of Self and World as a research framework, which tries to enhance our understanding of emergence. The dialogic square of Self and World is a guide, in which four factors (labels), which are constructed in a way that depends on the issue that is studied, are brought into dialogues through three different complex relationships: complementary, contradictory, and opposing (see next section). The dialogic square tries to make sense of emergent, situational occurrences. Using the dialogic square allows us to create complex narratives. One looks at a phenomenon, for instance climate change, or Tranchée (see chapter 2), or water management (see chapter 7), from different perspectives in different relationships. For example, climate change can be framed as an environmental problem, or an energy problem, or a footprint problem, which each produce different, often contradictory, narratives and affordances (possibilities for action). These perspectives produce as many different complex narratives: 'in coherentist epistemology, the ability to tell what has happened is linked to the ability to tell how one has arrived at one's interpretation' (Letiche et al. 2011: 109). Ascribed coherence – i.e. applying the same labels repeatedly to emergents, cannot be based 'on knowledge that is emergent' (ibid.). One tries to show emergence *indirectly*. In other words, it matters what narratives you are faced with and in which context they are storied. Our *ability* to tell stories about Self, Group (society, organisation), Environment (world) and Emergence (change) matters. The dialogic square shows the importance of context and reflexivity.

Generic models that apply universal rules to ascribed labels, as we will see with the 2x2 matrix, can only analyse decontextualised occurrences, and perceive the situation in a homogeneous way. Letiche & Lissack assert: 'At its heart, the dialogic square is a device for facilitating dialogues, query and iterative understanding' (ibid.: 32). Within the set of interactions contained in the dialogic square (see figure 4), we can ask: 'How does *self* recognize *emergence?* How does *self* incorporate *emergence* into the possibility space of its next actions?' Self has identity, an I attached to a me, and agency. Emergence has no truck with I/me; it inevitably threatens anything already defined with change, dynamism, and indeterminacy. Likewise, collective self or shared existence in a group is threatened by emergence (...) The key question is, what, if anything holds all the diversity together? We answer, complexity coheres if our narratives let it. Coherence depends

on our ability to tell stories that describe self, group, world (circumstance) and change. We know or cognize the emergent when we find and share stories about it. Without the ability to describe what emerges, events and actions cannot produce coherence. Our ability to articulate what emerges connects us to the world. Emergent possibilities are meaningless unless we can make them into stories that we can share--- i.e. emergence has to enter into (individual and/or collective) consciousness if it is to be acted upon' (ibid.: 32-33).

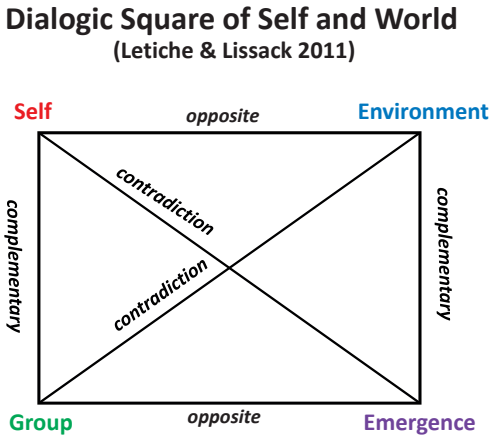


Figure 4

Letiche & Lissack make a crucial distinction between ascribed coherence and emergent coherence. They describe coherence as follows: 'The pulling together of things, ideas and events into a unity and a sense of whole. Coherence is about making sense and about how we make sense' (ibid.: 19). Ascribed coherence is one of the (hidden) pillars of most mainstream management literature, as will be discussed in chapter 4. The simplicity paradigm is founded on this concept: a priori one defines a clear goal, one describes the management model in use, add a chosen or constructed 2x2 Matrix; one specifies the label and the rules that should be followed in the implementation of the model; one audits the output retrospectively; then one feeds the output back to the input. Emergent Coherence and experienced coherence focuses on practice and gives a better description of everyday life in organisation and/or organising. Experienced coherence takes emergence as its starting point, ascribed coherence puts the labels that prescribe practice, in the foreground. Complicatedness is related to ascribed coherence; complexity is related to experienced coherence. Ascribed coherence is associated with codification, emergent coherence with cues (Letiche et al. 2011). The following account illustrates the difference between ascribed and experienced coherence. In the video 'A

View from Above', the Iraqi-Kurdish artist Hiwa K shows the story of a person called K: 'when he applied for asylum in Europe, he was asked to describe his hometown. K described the streets in detail to the immigration officer, and still, he was not believed. The immigration officer only knew the city from maps, and thus looked at the city from above, while K described it at street level. Because of this confusion, K was not accepted as a refugee for five years' (Smallenburg 2017). K's description of the streets shows experiential coherence, the map of the immigration officer shows ascribed coherence.

We have become accustomed, guided by first-order systems theory, to study systems (organisations), especially from an input-output relation, ignoring what is happening in the black-box that is between the two signals. Open systems interact with their environment, a closed system does this very sparingly or not at all (isolated system). Following Morin, it is not so much about the input-output relations of a system (black-boxing), but it is the complex opening and closing of a system which should be studied (grey-boxing): 'Entries and exits are linked to organisational activity, thus to active organisation, that is to say, organisation, which by that fact is transforming and producing' (Morin 1977/1992: 196).

Three-fold Complex Relations

The three-fold logic of the trilemmas of Morin, as well as the four-fold logic of the dialogic square, assume that the factors differ, in other words, that they are irreducible to each other. Both logic introduce three types of complex relations between factors and emphasise the relatedness of factors – i.e. the factors nor the relations should be observed in isolation, sweeping away emergence. A third similarity between both logics asserts that difference in aggregation level matters (for example between Self and Group): 'The complexity paradigm studies all phenomena in a triple relationship: antagonism, complementarity, and rivalry. Thus, far from accumulating knowledge in the vain hope of totalisation, La Méthode is an attempt to make them communicate when they have been mutilated by disciplinary fragmentation and the "disjunction paradigm"' (Morin 1994: 24).

In sum, both Morin and Letiche & Lissack transcend the two-fold logic of dichotomy (thesis <> antithesis), which have an opposing relationship with each other, by proposing three-fold relations marked by complementarity, contradiction, and opposition, in a dialogic interplay of distinction and correspondence (see figure 5).

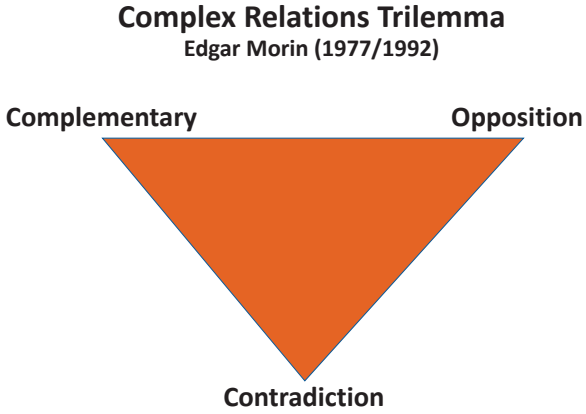


Figure 5

If one discusses these factors in pairs, thus as dilemmas, one can only consider them in one relationship with each other: either complementary, contradictory, or opposite. The dialogic square of Self and World shows two complementary dilemmas: the dilemma between Self and Group and the dilemma between Environment and Emergence. The dilemmas between Self and Environment and between Group and Emergence are to be considered as opposites. The dilemma between Self and Emergence and between Group and Environment can be characterised by their contradictory relations (See figure 4).

These relations are not absolute and can trade places, depending on the context. For example, self and group can experience simultaneously complementarity (collaboration) and opposing views and relations. This depends on context and perspective of the actors. In other words, the three relations (complementary, contradiction, and opposite) in which the factors are related to each other, cannot be captured in an either-or relationship (dilemma). By adding a third factor to a dilemma, the dilemma is broken open, because three complex relations are brought into play at the same time. As a result, the extreme reduction of the dichotomy (dilemma) is complexified, and simplification is broken up, and more room is afforded to the complex nature of the organisation and/or organising process. Thus, better justice is done to the emergent nature of the events.

In this way, black-boxing of sense-making processes is pried open: grey-boxing. The epistemological positions that argue that sense-making can only take place in advance (through ascribed coherence) or in retrospective (reflection), is problematised. In the ex-Ante position, practice is squeezed into a theoretical model in advance, and in the ex-Post position, the complexity of practice is largely reduced by a constructed framework of retrospective reflection (e.g. audit model). I assume herewith that in both positions - ex-Ante and ex-Post - there is no room for emergence. By introducing the

fourth factor in the dialogic square, and thus creating several trilemmas, the black-box is to a certain extent, pried open.

Method: Narrative Ethnography

My research is practice-oriented. In this book, two cases are discussed, applying the framework of the dialogic square of Self and World (Letiche et al. 2011). In the first case, the making process of an artwork is discussed from the perspective of the artist. It describes lived emergence in a diachronic process on micro level. The case is narrated from the perspective of the artist, an iterative monologue, indirectly commented on by a few participants (see chapter 2). In the second case, emergent processes in Dutch water management are described synchronically on a mesolevel. In this case, four clustered perspectives are introduced, based on a multiplicity of perspectives (see chapter 7). In both cases, I am not primarily focussed on the disclosure of new insights of the casuistic, but on whether the dialogic square of Self and World provides a better, more profound, indirect, understanding of emergent processes. The thread in the presented casuistry is 'coping with complexity'. The studies are qualitative: they do not provide quantitative data. Complexity is not quantifiable – i.e. cannot be researched rigorously with a Mode-1 heuristics and hermeneutics. The above-mentioned complexity concepts inform the ethnographic studies and vice versa. To research experiential coherence, I use, a narrative method. The data were gathered through narrative interviewing. Narrative interviewing can be characterised by the following statements: (1.) Narratives privilege the reality of what is *experienced* by storytellers: the reality of a narrative refers to what is *real* to the storyteller; (2.) Narratives do not copy the reality of the world outside themselves: they propose representations/interpretations of the world; (3.) Narratives are not open to proof, and cannot simply be judged as true or false: they express the truth of a point of view, of a specific location in space and time; (4.) Narratives are always embedded in the socio-historical. The particular voice in a narrative can only be understood in relation to a larger context: no narrative can be formulated without such a system of referents (Jovchelovitch & Bauer 2006: 72, in Bauer & Gaskell 2000/2006). I would like to add a fifth statement, informed by David Boje (2010), who assumes an integration of the interviewer (subject) in the narratives of the interviewed (object): 'We can have reflexivity in how our ways of narrating and storying the past, present, and future says something about how we think about how any complex situation was, is, and could become. But, for Morin, the narrating and storying are also having their impact on that situation. As in Heisenberg's observer-effect, when we watch it we change its dynamics. In consulting

(as in life) there are no neutral, non-intruding bystanders. The narrating, in its BME,[8] in sorting of narrative fragments into wholes can be order-making, simplification, reduction, and control. The storying can be more diffuse, more amplifying, more about the play of differences that is the disorder of complexity. When order interplays with disorder, we have the organization of patterning that is complex' (Boje 2010: 49).

Telling stories is a rich and varied method of portraying the situation and events. Storying tries to make sense of the environment, the organisation, the emergent events, and the role that Self and others play. Sensemaking, awareness, and reflexivity are therefore important aspects of a narrative method. David Boje makes a distinction between a narrative and a story (Boje 2008). Mainstream organisation theories are a largely descriptive and/or prescriptive discourse about controllability (order) and thus deny, in their narratives, the constitutive possibilities disorder might provide.

With the complicatedness-complexity divide in the back of our mind, I make a distinction between narrative organisation (ascribed coherence) and storytelling organisation (emergent coherence): 'Narratives shape our past events into experience using coherence to achieve believability. Stories are more about dispersion of events in the present or anticipated to be achievable in the future' (Boje 2008: 4). An important difference between a narrative and a story is that a narrative mainly shows the complicatedness of a world that is (pre-)arranged, told from a specific perspective (political-administrative, or scientific, or management or technological or workplace position), displaying the dominant political, business, or sectorial ideology and mirroring its position(s) of power. A narrative is a construct of social reality. Ambiguity and complexity characterise stories. They are open to interpretation. A narrative is a construction in retrospect (or anticipation), stories are lived speech in the present: 'Modernist organizational science is presented as a linear grand narrative, where postmodern science stresses the nonlinear, multi-vocality and impressionistic fragmentation of knowledge' (Boje 2001: 12). A narrative represents order; that is, the formal, official, and dominant discourse, the strong and visible signals within organisations - i.e. the legitimate themes of an organisation (Stacey & Mowles 2016). Stories represent disorder, the informal, and the weak, often hidden signals in the environment, as well as the shadow themes of an organisation (ibid.).

Researching the cases, I made use of (ante-)narrative methods[9], as this approach provides the rigour that is required for researching emergent processes. I note that there

[8] BME: Ordering a narrative with a Beginning, Middle, End structure.

[9] The distinction between narrative and story that is stressed in this section may be confusing to the reader. Narrative methods are a set of methods to study organisations. This set includes methods to interpret 'organisational stories'. In general, narrative methods look somewhat down on story(-telling). Narrative methods try to organise stories into a coherent whole. David Boje, amongst others, opposes this hierarchy between narrative and story by proposing a supplementary form of analyses: antenarrative methods. In

is not one narrative method or approach, there is a plethora. Narration is as old as humanity, people tell stories about events that have occurred to them or others, a long time ago, or just, but also in the future. These stories usually try to put meaning to the environment and the role that self or others play in it. Sense-making is, therefore, an important aspect of a narrative approach. David Boje asserts that stories can be studied, and provides solid argumentation, in the context of complexity studies, that they are crucial for understanding emergence (Boje 2001, 2008; Letiche et al. 2011).

Storytelling relates to what is being said (content) and how it is told (relation), and in which contexts the story is told. Stories are often marked by a whimsical course, describing bits and pieces of reality, ramble from one subject to another, and thus are not linear in the sense of an unambiguous causative relationship (BME structure). Stories seek to actively give meaning to the situation or series of situations that are being told. Stories are relational and show experiential coherence. Meaning can be bestowed by the researcher, by the researched, or both. In any case, it is often the case that the official narrative of an organisation, see, for example, chapter 7, falls apart into many local stories and individual stories. In addition, these local stories are perceived and discussed from different perspectives and contexts. Sense-making is intended to interpret and construct reality in its specific social context and the context of the narrator's and/or researcher's practice. It shows dialogic interplay of order and disorder, trying to understand emerging complexity. Complexity that arises from the interaction between the perceived order and disorder. Living stories may be told by different storytellers (chapter 7) or by just a single dominant narrator (chapter 2). The stories are thus anchored in the social process of the specific, daily lived realities.

A narrative is a constructed and structured story with a beginning, a middle and an end (BME structure), which generally has a plausible causal and linear course. The narratives possess clear plots and are framed from a certain perspective, worldview, coherence, dominant organisational ideology, and power position. The various stories are situated, often by the researchers (sometimes by the narrators), in the narrative. According to Boje, stories *precede* the narratives – i.e. stories are narratives in genesis, or *ante*narrative (Boje 2001). According to Boje, antenarratives have five dimensions: "First, antenarrating is both before whatever narratology as a method and theory supplements, frames and imposes onto story (…) and is still a 'speculation' (…). Secondly, antenarrative gives attention to the speculative, the ambiguity of sensemaking and guessing as to what is happening in the flow of experience. It answers the question 'what is going on here?'

the wording of Boje: 'Antenarrative is the fragmented, non-linear, incoherent, collective, unplotted and pre-narrative speculation, a bet. (…) The crises of narrative method in modernity is what to do with non-linear, almost living storytelling that is fragmented, polyphonic (many voiced) and collectively produced' (Boje 2001:1). In other words, if one studies emergence, antenarrative methods are an important resource to enhance better understanding of emergence.

(…). Thirdly, antenarrative directs our analytical attention to the flow of storytelling, as a sense-making to lived experience before the narrative requirements of beginnings, middles, or endings. Narrative theory is an experience of the after-effects of storytelling once coherence is rendered, while antenarrative is an experience of the storytelling life with abbreviated and interrupted story performances that yield plurivocality (Boje 1995). And that life has its rules. Fourthly, antenarrative is about the Tamara of storytelling (Boje, 1995). In *Tamara*, Los Angeles longest-running play, a dozen characters unfold their stories before a, sometimes running, audience. (…) To me, Tamara is a way to describe how storytelling as an antenarrative occurs in complex organizations. The Tamara antenarrative speculation highlights the plurivocal interpretation of organizational stories in a distributed and historically contextualized meaning network – that is, the meaning of events depends upon the locality, the prior sequence of stories and the transformations of characters in the wandering discourses. Fifthly, antenarrative is collective memory before it becomes reified into the story, the consensual narrative. (…) And narratives are known only when they have been completely analyzed. I am more interested in antenarrative, where people are still chasing stories, and many different logics for plotting an ongoing event are still being investigated" (Boje 2001: 3-5).

There is no end-state to emergence, and any research effort that wants to claim rigour, while studying emergence, especially on the third floor and certainly the provisional fourth floor of Morin's Complexity Edifice, begs for a multidimensional method. A method, which has an eye for both narrative (ascribed coherence) and antenarrative (emergent coherence). Morin, was for many years I repeat, accused of being a 'blemish on science', confirmed such a method some fifty years ago: 'Interpretation and research cannot be separated in time. The corpus of hypotheses cannot be established for once and for all but must be capable of development and modification as the inquiry develops, and in turn, modify the course of the inquiry and even the techniques of investigation. In short, it is a question of finding rigor, not in rigidity but in a strategy of permanent adaptation' (Morin 1970: 254). In these notions Mode-2 and/or a Mode-3 knowledge production resonate. Notions that are present in the method of Bricolage – i.e. tinkering with what is at hand: 'The bricolage subverts the finality of the empirical act. Bricoleurs make the point that empirical research, all research for that matter, is inscribed at every level by human beings. The assumption and purposes of the researcher always find their way into a research act, and they always make a difference in what knowledge is produced. Even in the most prescribed forms of empirical quantitative inquiry the researcher's preferences and assumptions shape the outcome of the research' (Kincheloe & Berry 2004: 6). As the book develops, I will elaborate further on these method logical issues, in relation to thinking complexity marked by emergence.

Proceedings of the Book

After this introducing chapter, I will provide you, in chapter 2, with a descriptive experience of lived emergence. In this chapter, the making of a work of art (Tranchée) is narrated from the perspective of the artist, showing miracles and nasty surprises.

In chapter 3, I will reflect on this story, guided by the dialogic square, trying to make the emergent processes visible. In doing so, I will breathe some air in the theoretical concepts by discussing a prevailing trilemma in the dataset in relation to other trilemmas.

In chapter 4, we will arrive, in the quest for emergence, at the first floor in Morin's Complexity Edifice. I will argue that the paradigm of simplicity, as the curse of epistemological failure of the dominant management discourse, has no room for emergence. Special attention will be given to a central concept in mainstream organisation theory: the 2x2 Matrix.

In chapter 5, we will climb the stairway to the floor where emergence is invited to the table. We will encounter nonlinear deterministic systems theory, based on self-organisation. This is the floor that was my starting point for my emergence studies. I will deconstruct the concept of self-organisation and gradually, after an engagement with the rabbitduck, we will start climbing the staircase towards the third floor that Edgar Morin has constructed. I will clarify how Morin has tried to square the epistemological circle of complexity; how Morin's trilemmas make room for emergence and make us aware of the importance of complexity marked by emergence.

In chapter 6, we arrive on my provisional fourth floor that I added to Morin's Complexity Edifice. How do Letiche & Lissack, guided by the dialogic square, make awareness of emergence possible? I will clarify the importance of aggregation level difference, and elaborate on the coherence concept. Then, I will discuss the significance of the dialogic square.

In chapter 7, I introduce the water management case. What work is one able to do in practice, informed by the dialogic square? Firstly, I will contextualise Dutch water management based on a diachronic account. Subsequently, I will confront my dataset with the dialogic square, to see whether I get any closer to enhancing awareness of emergence than Letiche & Lissack did; or does the epistemological trap and fallacy of defining emergence defeat my effort?

In the final chapter, I will reflect on my quest for emergence.

I invite the reader to join me in my wanderings in Morin's Complexity Edifice. If you fail to take the bend, it is entirely my responsibility, as I might start to stumble over my words. Thinking Emergence is a balancing act, walking the fine line between finding new insights and the collapse of sense-making. I hope that this will provide some solace to the reader, as it did to me.

First Part

Lived Emergence

Chapter 2

Thinking Body

The essence of my work is that it emerges from my involvement with the material (…) The total involvement, body, and soul, I seek with the clay, occurs before thinking, on the level of experiencing and is about presence, presence as opposed to, or maybe more coming before, representation. It takes place at a fundamental, existential level, where boundaries between subject and object fall away. It is, doesn't represent anything.

Alexandra Engelfriet in Jo Dahn (2015: 47).

I think with the knee anyway.[10]

Joseph Beuys (1977 Gebr. König Postkartenverlag Köln).

[10] Ich denke sowieso mit dem Knie.

Emergence of Tranchée

The opening move in this book is the story of the visual artist Alexandra Engelfriet, who, in the summer of 2013, created a work of art (Tranchée) in the sculpture park Le Vent des Forêts in France. The story evokes coping with lived emergence. She was given a free hand to create whatever she saw fit. In fact, she was commissioned to do something unusual, to reflect on her practice by breaking out of it. Such a request would not be disregarded, reflexivity *is* her practice. Nesrin During put it like this: 'A true mud person, Alexandra Engelfriet makes raw clay work and ceramic sculpture. Physical interaction with clay is at the core of her work. Her body, feet, knees, hands, and elbows are the only tools she applies to clay. They dig, slash, hit, imprint. Clay, silt, sand, organic matter softened with water are heavy but generous materials that meet Alexandra, giving, and receiving. The dialogues between Alexandra and clay is a process and an experience' (During 2012: 50).

The process and context (place) of making a work of art is a crucial part of Engelfriet's artistic ideals, the final work being the expression of the process. The stories of those places, the palpable historical process, and the circumstances play an important role in her interventions. Opportunities offered and prevented by the context, i.e. tinkering with what is on hand is an important starting point. The place and space where the clay work is created, e.g. a clay quarry in England, a barn in Norway, a Dutch mudflat, a clay dune in Denmark, the entrance hall of a bank, are typical starting points of her work process. She enters these spaces as open-mindedly as possible. In her own words: 'Awareness of clay as a natural material, which is animated by all kinds of forces, is at the heart of the processes I engage in during the making of a sculpture. Direct physical involvement with a large amount of raw clay takes one out of an object directed way of thinking and invites one into an experiential approach to the material. Without preconceived ideas about the result, the physical performative aspect of working with clay is emphasized and so new possibilities emerge' (Artist statement 2014).[11] A guiding theme in her research and creative process is the following question: 'What does clay do to me when I don't try to control it but on the contrary surrender myself to it' (Harsbo 2015). Karen Harsbo[12] describes it as follows: 'Repetition and her own physical, bodily interaction with the material are recurring features of her work. By engaging physically with the clay, working in patterns characterised by a considerable degree of repetition, the artist creates a kind of trance-like state where the internal and the external, form and content come together in a perfect synthesis. In her vast, indoor installations and

[11] See: http://www.alexandra-engelfriet.nl/masterclass.php. (Assessed 14 June 2016.)

[12] Karen K. Harsbo is a ceramist, artist, and associate professor at the Royal Danish Academy of Fine Arts.

outdoor performances, Engelfriet shapes the material – and is herself shaped by it in return' (Harsbo 2015: 13).

In this chapter, the story of the making of the sculpture Tranchée[13], an ethnography of lived emergence, will be told in Engelfriet's own words. Comments of participants and others will pop up in the story. Then, I will reflect on the Tranchée story in chapter 3, and will thereby introduce some theoretical concepts, concepts which are further elaborated in subsequent chapters. Tranchée has been realised in the period between the last week of June and the 14th of July 2013. It started with the excavation of the trench, followed by the making of the work of art, the building of the kiln, its firing, and the revealing of the result.[14]

Context and Dramatis Personae

Le Vent des Forêts is a vast sculpture park which consists of more than 5.000 hectares of forest and is situated in the heart of the area La Meuse, in the Lorraine, in France. The park accommodates more than a hundred works of art. Supported by the residents of six farming and forestry villages, each year several contemporary artists are invited to realise an outdoor project during the first two weeks of July. In 2013, the Association Le Vent des Forêts invited the artist Alexandra Engelfriet to participate. She sculpted twenty tons of clay, which she first applied to the walls of the middle ten meters of a fifty-meter-long trench, dug out in the limestone ground on a hilltop in the forest near the village of Pierrefitte-sur-Aire.[15] A kiln was then constructed enclosing this sculpture and it was fired day and night during a week. The finished work is now part of Le Vent des Forêts Sculpture Park.

The realisation of this work would have been impossible without the help, support, and participation of many residents from the nearby villages and occasionally from farther away. Pascal Yonet is the director of the Association Le Vent des Forêts, assisted by Romain Barré. The project was supported by Tuilerie (tile works) Royer (Soulaines-Dhuys), Chaudronnerie (boiler industry) Renneson (St-Mihiel), the Association Expressions (Bar-Le-Duc) and the volunteers of Le Vent de Forêts. They have provided materials, craftsmanship and indispensable help. The anthropologist Marc Higgin was Engelfriet's personal assistant and participating researcher during the realisation of the

[13] Tranchée is the title of the sculpture. In English translation, it means: Trench.

[14] See: http://www.alexandra-engelfriet.nl/projects.php.

[15] This dugout trench directly calls to mind the surrounding landscape still littered with the scars of the trenches dug out in the First World War. The area was one of the main battles fields of that time.

sculpture.[16] The artist Thiébaut Chagué advised on the construction of the kiln and the firing process. A film of the process of the making has been realised by Estelle Chrétien.[17]

Prelude to Tranchée

I will let the account of the process of the making of Tranchée as storied by the artist, which I recorded, largely speak for itself. Here and there, the text will be commented on by me and Marc Higgin. Subsequently, in the next chapter, I will comment on the story, using several key complexity concepts, which will be elaborated further in the book.

Alexandra Engelfriet: 'Where to begin? This complex project has so many aspects.

It stems from what went before; it is the culmination of my artistic development over the years. Everything I've done in recent years was a preparation for this. I received the invitation from Pascal Yonet, which I incidentally found in spam in my mailbox, to realise a project in Le Vent des Forêts that summer (2013). Without knowing exactly what it was, I spontaneously confirmed. Looking at the map, I found out that the sculpture park was very close to the city of Verdun. I understood straight away that I had to make a large version of my trench kiln.[18] This couldn't be a coincidence. The Western front of the First World War runs right past St. Mihiel and Verdun. The area of Le Vent des Forêts does not lie on the battlefields themselves - i.e. the ground where I have realised the project was not directly affected by the war. But 1914-18 is very present in this area. You'll find old trenches everywhere in the woods.

In early April 2013, I went there for the first time. We (Pascal, Romain, and I) explored the area to find a suitable location. It is a vast forest area, throughout where the works of art made over the past decades, are scattered. Pascal showed me several locations of which the one we chose seemed the best to me: on a hill where several straight, open paths lie parallel to each other. These were used to store the wood of the trees that were blown down during the great storm of 1999.

I stayed with a retired farmer: Bernard. This proved to be one of the characteristics of the project: the support of the local community, by helping, donating, or lending materials, by deploying their skills to make things, deliver homemade lunches to the site

[16] Marc Higgin is a Doctoral Candidate in Social Anthropology at the University of Aberdeen (http://www.abdn.ac.uk/staffnet/profiles/r01mch11/).

[17] See: http://www.alexandra-engelfriet.nl/film-II.php.

[18] Alexandra Engelfriet has dug a kiln in the slope of the garden, next to her studio in France, which shows similarity to a trench. See: http://www.alexandra-engelfriet.nl/projects.php?Album=Trench-kiln,%20 2010-2013&PhotoSetId=72157628230952787.

and welcoming the artists to their homes. All of this on a voluntary basis what makes this project so exceptional. It was incredible to experience how well the population supports the project, how positive, interested and involved everybody is. Many residents came regularly to follow the entire process. I could feel how sincere they were, and that it touched them deeply. These encounters, and the mutual experiences they evoke are essential to my work'.

Marc Higgin comments on the social aspect of Tranchée: 'In answer to my asking why they gave so much of their time and energy to the project, people spoke about the gratification of seeing their effort and skill becoming part of the work, of the exchange that changed the work of art and their experience of it. As an anthropologist, I could not help reading how this art-as-event – as a kind of emergent ritual and as an enduring work of art – brought out and made visible these social and material relations with a power allowing new social, physical and emotional connections to take form and persist in this place' (Higgin 2015: 62).

Engelfriet continues: 'Early June the excavation of the trench takes place, scheduled prior to the firing of a large sculpture by Thiébaut Chagué, in which I'm invited to participate (see section 'Flowing of knowledge'). Marc, who is writing a doctoral thesis on clay and its relationship with man, with whom I have been corresponding for some time, asked if he could assist me in this summer's projects as part of his research. He wanted to be there from the outset, to be able to follow the whole process, and therefore he also wanted to come to observe the digging of the trench.

The site is in the forest near Pierrefitte-sur-Aire. From now on I will stay with residents in Pierrefitte or Nicey-sur-Aire. This time with Christian and Katrine. Fabrice, the son of Bernard, excavation worker by profession, will dig the trench. Pascal has chosen a location somewhat higher on the hill, at the highest point, to minimise (ground) water running into the trench. The site has been stripped of vegetation: a wide and more than a fifty-meter-long stretch of barren ground runs from the path, between relatively low woods and bushes, to the edge of the forest, with tall trees.

Beforehand, I couldn't make up my mind whether Tranchée should be straight or curved. A curve would strengthen the feeling of 'really being in the earth', I thought,

and it would move nicely downwards with the slope and back upwards, which would cause the light to fall into it beautifully. But because the ground here is flat, as it is on the top of the hill, and the stretch is very straight, it asks for a straight line, right through the middle. The straight line creates a sense of monumentality, and it is nice that you can look through the trench, and it contrasts with the organic nature of the work, which makes it stronger, and above all: it will distinguish itself from a real trench, which, as I have observed, always meanders. I am not trying to imitate a trench, only to refer to it and transform it by creating a work of art. It is not about imitating nature, a landscape, or an object, but about an intervention in the land. An intervention in which the (historical) context of the landscape inspires and is present, and where the process, the making of the piece, comes first and not a pre-conceived model. Consequently, the preparation of the work is also part of the result, and the final result is the start of a subsequent process and transformation'.

Digging the Trench

Engelfriet continues: 'Fabrice arrives with his digger and a large truck to carry away the soil. Beforehand Romain, Pascal and I have determined the center of the strip and marked it with sticks and green paint. I explain what the intention is: a long cutout, over the entire length of the strip (nearly fifty meters), with a ten-meter-long middle section of over two meters deep, into which the front and rear section slowly descend along an inclination, until the more than two-meter-deep middle section is reached. The cutout is about one-meter wide, both sides slanting slightly, so the top is a little wider. The idea to have the sides sloping derives from my experience with this. It ensures that the clay remains attached to the wall and will not fall off. It requires precision because if you make it too slanted, the top will be too wide for the roof of the later to be constructed wood kiln. In fact, after the digging, the walls were still very steep, and without further intervention, the clay would have fallen off. Moreover, it was also rather narrow and with a thick layer of clay added, the passage would have been too narrow. But let me not run ahead of events.

I explain to Fabrice what I want. He looks, nods, and climbs into his machine, and brings it to where the trench will begin, at the far end of the strip, near the tall trees on the opposite side to the path. The container of the truck is placed behind him, so he can drop the dug-up ground into it. When it is full, the soil is driven off. This is repeated throughout the procedure, which lasts for two days. The moment that the scoop of the digger cuts into the ground for the first time, is emotional. Difficult to describe. It feels violent as if he cuts into flesh. He cuts right through the roots of trees and tears them out. At the same time, it has something tender, soft, because he works so precisely and

carefully. With incredible precision and certainty, he does his job. With the underside of the scoop of the digger, he smooths the ground of the path. Slowly a path begins to emerge that descends.

We knew beforehand that the soil consisted of limestone, but not what the composition of the ground was like, or if we could get into it at all, not knowing how hard it was. The clay layer turned out to be very thin, below it loose limestone clumps was held together by clay, a pretty solid rocklike mass. Fortunately, the digger could cut through it and finally, Fabrice reached a depth of nearly two and a half meters in the middle section. He couldn't go any deeper because the ground became too rocky. The first uncertain factor, fortunately, turned out well: the ground was suitable, not too hard to dig in, not too soft so the walls would collapse. Even with heavy rainfall, they kept well, only slowly bits of clay would be washed away and pieces of limestone come loose. There was, however, a fear that some bits of lime would later end up in the clay, expand and then explode during the firing.

In two days of stiff work, the trench slowly emerged. Fascinating and emotional to be there, to watch, take photos and film, occasionally giving an instruction, for example by assuring that Fabrice dug completely straight. We also hesitated whether it shouldn't be wider. Finally, I decided against it; what was once dug away, could never be put back, while I could always hew away more by hand, as I wanted to preshape the walls after the digging. Fabrice worked very precisely with his digger but was limited in his movements.

He could only go backward, and not go back over where he had already dug because the gap was too wide. He could not work from the side, as his machine was too big for that. So, it had to be right the first time. An impressive, almost fifty meters long, sharp rift in the ground slowly appeared. A cut as sharp as the blade of a knife'.

The Quest for the Third Dimension

The Tranchée project doesn't appear out of anywhere, it is the next step in Engelfriet's research. The process of creating a work of art is, (un-)consciously, an investigation of reality, matter, and space – i.e. the further developing of experiential knowledge accumulated over the years. Developing and showing craftsmanship in different contexts every time. Tim Ingold refers to the art of inquiry where he differentiates between

making through thinking (theorist) and thinking through making (craftsman). An important concept in this differentiation is *correspondence*: 'Yet while we might learn much *about* art from the analysis of its objects, we learn nothing *from* it. My aim, to the contrary, is to replace the anthropology *of* with an anthropology *with*. (…) To carry out anthropology with art is to correspond with it in its own movement of growth or becoming, in a reading that goes forwards rather than in reverse, and to follow the paths along which it leads' (Ingold 2013: 8).

Engelfriet continues: 'During my explorations over the past few years, I have been looking for three-dimensionality and sculptural quality. Starting with the Marl Hole[19] project, where a digger punched out cavities in the clay slope, breaking through the flat plane and giving it three-dimensionality and monumentality. In Tasmania,[20] I broke with my somewhat methodical way of working a layer of clay rhythmically from left to right. I now shaped it first here, then there, and so let the work of art emerge. Afterwards, I raised parts by applying more clay, thus emphasising a movement, creating accents, and, working like this it came together as a whole. I had developed this new way of working first on a small scale when I was working on the walls of thrown cylinders. But here, on a large scale, it eventually seemed to remain sort of trapped in the ground plane. I realised then that the ground plane, onto which the clay is applied, should be formed first. Only then the work becomes sculptural and starts to move. I investigated this on the walls of my own trench kiln in St. Martin de Salencey, by creating undulations in the walls before applying the clay.

I wanted to use this new knowledge in this project, by carving into the walls at certain places, thus creating a relief. This would also prevent the clay from sliding off the steep walls. But the hewing with a pickaxe in the rocky soil was hard going. To get as much movement in the walls as possible, I thought of making sloping ledges. Ledges created by carving out a relief of diagonally running ridges, from bottom left to top right. Ledges on which the clay could rest. I tried to catch two birds with one stone:

[19] A raw clay project organised in 2009 by Neil Brownsword as part of the first British Ceramic Biennial in Stoke-on-Trent, England. For five days Neil Brownsword, Torbjørn Kvasbø, Pekka Paikkari and I explored the material of clay in its rawest state, at the location where it is dug out of the ground: Europe's biggest clay-quarry (marl hole), Ibstock Brick's Gorsty Quarry in Knutton, Stoke on Trent. The film by Johnny Magee documenting the process was shown at the Airspace Gallery in Hanley, Stoke-on-Trent, during the British Ceramic Biennial festival. Ibstock's workmen and their diggers made it possible to cope with the huge scale of the quarry. In this project, physical interaction with the clay and mechanisation came together. The film by Johnny Magee follows the work processes of all four artists (See: http://www.alexandra-engelfriet.nl/projects.php). See also: Moor 2012: 258-274.

[20] In the courtyard of the old Jam Factory in which the Tasmanian School of the Arts in Hobart is housed, I worked during a week in 2011 with a field of yellow clay, straight from the quarry and feet wedged by the students of the sculpture department. Glen Dunn has made a film. The project was an initiative of Creative Arts - Tasmanian Polytechnic, supported by the School of Art - University of Tasmania and sponsored by the Pathways Project See: http://www.alexandra-engelfriet.nl/film-II.php.

create three-dimensionality and movement, and at the same time prevent the clay from falling off. The ridges gave support to the clay and I applied the clay upwards from them, and in this way, I could also cover the steeper parts. Of the steep parts, especially down below, clay has indeed fallen during drying, which is nice because there you see the rock, which has been colored by the fire. That gave some nice scars and scratches, and space, so you can walk through the trench more easily. Working with the pickaxe was tough: hard hacking and disposing of all the debris in wheelbarrows. And it was hot. We've been very lucky with the weather all the time. The week before it had rained so hard that again many skeletons had emerged from the mud near Verdun. The carving took a week. Romain has helped several times. The pattern was formed in the process, feeling one's way: this laid the foundation for the work. This preliminary work has proved to be very important for the ultimate success of the project. Because of this base, this framework, was so good, that working with the clay became easier. I could just follow this structure without thinking about form. The clay remained in place. It was exciting to experience that my experiential knowledge of the material is so well developed, that I largely know what the material is going to do, even on such a large scale. Invisible to the viewer, that frame, but the secret to why the work turned out so well'.

Comment: This fragment illustrates two things: an experimental attitude towards finding solutions to technical and practical problems can open new possibilities and might bring new skills, and; secondly how making is dependent on the possibilities available – i.e. correspondence by thinking through making (Ingold 2013). The continuation of the Tranchée story will unveil this aspect, while increasingly adding coincidental contexts.

Flowing of Knowledge

Engelfriet continues: 'During that week the firing of Thiébaut's sculpture in Bar-Le-Duc also took place. How fortunate that this happened just then! Because also that experience has been crucial to the project. An accidental course of events regularly influenced the process of the Tranchée project. By chance, two very special firings took place one just after the other, and very near to each other. Because it was so close, we could work on Tranchée at the same time.

In April, we visited Tuilerie Royer (Tilery) that supplied the clay. Jean-Louis Royer does everything by hand: the grip with which he takes hold of his bricks and turns them over is visible through his fingerprints. Throughout the firing process, he was 'present in absence' through those fingerprints, as we received a pallet of rejected bricks to use. The Tuilerie has its own clay quarry. The clay first goes into a container, made of brick,

to soak. Then through a kneading machine, of which the motor is driven by a very long rotating belt, and out of which the clay emerges in a slab, whose thickness can vary. These slabs are cut by hand into bricks or roof tiles. Five times each year an enormous kiln is fired, which consists of two ten-meter-long chambers next to each other, which are separated by a wall. At the end of the wall there is an opening, so the fire, which is stoked in the front section of one space, comes back through the other.

Jean-Louis' wife runs a training centre for pottery. Jean-Louis and Françoise were both very interested in my project and delivered the twenty tons of clay on pallets, kneaded and in the shape of bricks. In early June, we went back to make sure they would deliver on time and to show interest. Jean-Louis had just started firing. The entire kiln was packed with piles of bricks, there was a big fire in front, a large stoking hole without a door, and Jean-Louis completely in his element, full of passion for firing. The greatest thing there is according to him. He fires the bricks and tiles in nine days.

The firing of the sculpture "Le Ciel" by Thiébaut Chagué in Bar-Le-Duc, and my participation in it, would prove to be very important for the process of Tranchée. It was a beautiful experience: in an open square, the esplanade, on the highest part of town, beautiful weather, eating all together at long tables, the red-hot menhir-like shape glowing in the night, which had a magical attraction, we were as if glued to it, staring at this glowing primal form, a powerful, primitive ritual. The moments that were planned for the public were cancelled every time, as at those moments there usually was nothing to see. Once, because the firing had ended sooner, as it was going to rain and Thiébaut, therefore, decided to open the kiln earlier than planned. Later, in my own making- and firing process the same thing happened. It eludes planning and programming; firing claims its own time.

Because the firing finished sooner than planned, there was a lot of wood left that I could use for my project. Finding wood for my project was a problem that by no means was yet resolved. A good quality of Pascal was that he trusted the process and was confident that he would succeed in some way or another to find the wood, waiting for the right moment, when the opportunities presented themselves. He is confident that things work out well, in the end, an important quality, which gave us confidence too. A recurring feature in the Tranchée process was, that what the management and (volunteering) staff of the Vents de Forêts were not able to organise, emerged eventually out of nowhere. Our confidence in this phenomenon, i.e. in the process, has been vital.

Pascal arrived immediately after I called him about Thiébaut's leftover wood. We were having lunch under the tall trees on the Esplanade of Bar-Le-Duc. The firing was finished, the kiln was cooling down. Seeing the construction of Thiébaut's kiln has been essential for Pascal and Romain in understanding what I intended to do for Tranchée. Seeing the kiln brought it all to life for them. Both understood how important this event was for my project. It was a happy coincidence that Thiébaut fired his piece there just at

that moment, so nearby, and had invited me to participate. Seeing how the metal frames with ceramic fiber were made, was the starting point for the making of the frames for Tranchée's roof.

The firing of Thiébaut's work was made possible by l'Association Expressions, the ceramics Association of Bar-Le-Duc, which is very active and consists of a fixed group of loyal people. Philippe, where Marc and I were staying, is an active member of it. A very important coincidence, too. I had thought that the porcelain buttons, which are needed to secure the ceramic fiber to the frames, could be purchased. It turned out that these buttons had to be made separately. I would need six hundred buttons, and the project would start in two weeks. The buttons for Thiébaut's kiln were made by members of l'Association Expressions, including Philippe. Marc suggested that they might also make the six hundred buttons for me. I thought that was asking too much, but I explained the problem to Philippe who immediately offered to produce them. This later turned out to be an important element in the puzzle of the firing process. Again, something that emerged and was resolved in the exchange with others, by keeping an open mind in the process, because I happened to be there, in Bar-Le-Duc, at Thiébaut's firing.

Thiébaut had mobilised many people from where he lives in the Vosges, as well as the people of l'Association Expressions, to come and help with the firing of his piece. They were colleagues and others who have helped him with his firings for years. And when I met them, they became interested in my "projet un peu fou". Thiébaut told everyone about it and encouraged people to come and help me. The day after unpacking his piece, Thiébaut visited Tranchée and gave valuable advice about the construction of the kiln. It was touching to observe him during the unpacking of his work, which took place in public. He was very tense because things had gone wrong during the firing. There were scars in places where the clay had been blown off and there were cracks. However, it kept together as a whole. I remained at a distance because there was a team to help with the unpacking. Only later, I went up to him. I saw how unsure he was, kept repeating what had gone wrong, and was afraid he would not be able to suspend it in the chapel. I said that I liked the cracks and scars, as they are part of the firing process, and that, as it kept together as a whole, there was no reason not to be able to suspend it. Perhaps he could strengthen it here and there. He eventually succeeded, but unfortunately, he has tried to hide all the holes by applying gold leaf to them. That has, in my view, somewhat spoiled it. *It shows a different way of thinking: the ceramic way of thinking, in which cracks and the like are considered as a failure, rather than being accepted as part of the process, especially with this type of firing processes. A strange contrast.*

But it was also an incredibly brave project, bearing witness of an enormous craftsmanship; making such a huge sculpture, the drying full of risks, transporting the unfired work, the firing and then suspending that huge colossus upside down in a chapel. A true

Andrei Rublev story.[21] A long documentary has been made of the whole project. The hoisting of the metal suspension system for the sculpture in the chapel is incredible to watch. Thiébaut, with a long beard and a wide leather belt around his waist, another big man with long gray hair and a long gray beard, and Fernand, whom I will describe later, hoisting a huge Gothic shaped metal frame in the chapel: a medieval scene. This engagement with the seemingly impossible, a process full of uncertainty, is probably what he recognised in me, and might explain why he has been so involved in my project. Once again: extraordinary that these two projects were contemporaries in the same area'.

Comment: Thiébaut Chagué's project, which by chance preceded her Tranchée project, didn't only teach Engelfriet a lot about firing on a large scale, but also yielded a large amount of good, dry wood that proved later to be crucial in her own firing. Also, the contacts she made with people who came to help with her firing were important. Pascal, Romain, and Alexandra have been able to carefully work out the structure for her kiln, to which Thiébaut's kiln has served as an example. His advice about the construction of the chimney proved later to be significant for the success of the project. And, finally, the solution provided for the making of the porcelain buttons needed to attach the ceramic fiber to the roof panels of the kiln, was crucial.

The project as it unfolds through the account of the artist shows how she is challenged to engage in a truly unpredictable process, working from scratch and *letting the work evolve from the working process itself*. That is when things happen that could only happen at that moment in time, at that particular place, and it shows how new possibilities emerge. The process of exploration and the realisation of the work, seemingly affect each other. This aspect will be repeatedly observed as the story that tells the making of Tranchée, progresses.

Making Tranchée

Engelfriet continues: 'The clay will be delivered on June 27th, so I will be able to start sculpting the next day. Marc will arrive on June 30th. Beforehand, it was agreed that the pallets of clay would be placed on both sides of the trench so that I could throw the bricks of clay against the opposite wall from above, and cover the walls with a layer of clay. I would not have to drag the clay about. Without a doubt, this could be done with

[21] From Wikipedia, the free encyclopaedia: Andrei Rublev is a 1966 Russian film directed by Andrei Tarkovsky from a screenplay written by him and Andrei Konchalovsky. The film is loosely based on the life of Andrei Rublev, the great 15th-century Russian icon painter. The film is about the essence of art and the importance of faith and shows an artist who tries to find the appropriate response to the tragedies of his time (see: https://en.wikipedia.org/wiki/Andrei_Rublev_(film).

a machine, they promised me. Unfortunately, the ground proved to be too soft to hold a machine and the strip was too narrow for the truck to come closer. When I arrived, eleven pallets were placed at the beginning of the trench, at a considerable distance from the center. This meant, yet again a lot of lugging. The blocks must be loaded by hand, one by one, into a wheelbarrow and pushed to the middle of the trench. Removing the sticky clay bricks was hard on the arms and fingers. Fortunately, I regularly had help. During the covering and the beginning of the shaping of the first wall, Marc was not present yet. Lou, a Vietnamese boy from the village who has been much involved in the projects, helped. One afternoon, just when I thought, I really could not continue, it just was too heavy to do this alone, a father, Henri, friend of Jean-Louis and Danielle, with whom I stayed, arrived with four children to help, and all together they processed four pallets. Henri and his wife Babette were greatly involved in the project, came to visit me often, and wanted their daughters to experience the whole process.

What we aimed for, while applying the layer of clay by throwing the blocks, was to place the clay well on the pre-formed walls. It was, of course, very important for the success of the project that the clay is applied in a way that it won't all fall off during the drying and firing. We applied a lot of clay to the places where the ridges support it, and we build the clay up from below at places where the walls are very steep so that it is supported from underneath. The chance that it would fall off later, when it dries, was thus reduced. The clay was soft and as the clay bricks forcefully hit the wall they become distorted. Thick layers of these exploding, deformed clay bricks are reminiscent of collapsing buildings and mutilated bodies. Without having conceived this in advance, the walls laden with bricks form a strong and dramatic beginning and the basis of the final work. They evoke strong associations with war and destruction, piles of dismembered corpses, or fragments thereof, i.e. the trenches. With the force of my body, I brought it back to life. In the final work, here and there mud bricks remained visible, you could still experience the starting point.

On the third day, one wall was covered, and I could start working. It was the least steep wall, with ledges on which I could easily stand, which gave me support, so I could form the thick layers of clay with force. It was extremely hot, and although the clay seemed soft and pliable, it proved to be rather "short", with a lot of non-plastic material in it, which hardens very fast. I found myself in a race against the clock to process the clay before it becomes too hard. At first, I had no water to keep the clay wet. Water turned out to be a necessity. Romain called Yves, and he and Olivier soon came with a large barrel of water. Later, Laurent (farmer and head of Le Vent des Forêts) brought a thousand-liter container, so the clay could be moistened regularly and kept workably, but it was hard work and I needed a lot of force to penetrate the clay, which hardens under my hands. Indeed, it was a true battle, as people so often say about my work, a

tough fight with the earth. There is nothing soft and sensitive about it, it demands all my strength.

Many people came to watch, from Bar-Le-Duc, among other places. The project is filmed by Estelle Chrétien and photographed by Christophe. Christophe Beurrier, someone from Bar-Le-Duc, whom I also met during Thiébaut's firing, often came to take photographs. He took a series of beautiful images of that afternoon in the clay.

I had to go for it completely and shaped the wall from right to left, following the movement of the ridges, in one go. One large effort, without thinking. Because the clay hardens so fast, I could not go back to places that have already been done and continue to work on them or change them. It should be done in one go and that is it. The work became one movement, which continues and flows, but I could not connect with it, feel it, become one with it, and fall together with it. It was a tough fight. Then Marc arrived. He and Lou began to cover the other wall while I was still working on the first. After two days of working it was finished.

It rained the first day of working on the second wall. This was the most exceptional day regarding the forming of the clay. There was nobody around because of the rain, which made the work much more intimate and I could focus better on the experience of making. Only Estelle and Marc were present. The rain softened the clay, so I did not have to apply as much strength to penetrate it, and I could work with much more feeling. I could remain very close to the clay, and that is what I am looking for, that intimate contact between me, my body, and the clay, to really connect with it. At the bottom of the trench, water had gathered, forming a deep puddle into which I can immerse myself, lying on the floor of the trench, in the water. Being wet, my clothes are much smoother, and the clay becomes even softer.

This wall was steeper than the other one, and although there were also deep cavities, the filling up with clay has made the wall flatter. It was up to my body to find where the clay was deep and to penetrate it and create three-dimensionality and relief. I worked from touch and feel, close to the clay, almost with my eyes shut, I lowered myself slowly, sliding along the wall, a smooth motion, a knee that cuts through clay and leaves a sliding track behind. Then, moving smoothly, I climbed back up, I found the places where I could put my foot, keeping in touch with the wall all the time, without taking a

distance, without looking at what happens in the clay. As a result, this wall was stronger. The other wall had beautiful, rough shapes, but this wall had more feeling, it emerged from a sensuous experience. And this experience was perceptible in the result. This was what I have been looking for from the beginning of my engagement with clay.

Working with gravity was a new experience, which I found very exciting. Using gravity, less force is required, and I can let myself go more freely and leave sliding tracks in the clay. I want to investigate this further. It is extraordinary that my artistic ideals were manifest in the work. You cannot fake it, it communicates because it is real, real experience, genuine feeling. And that it is real, that's what it is all about. It is palpable and remains intact in the fired result. Wow. During the afternoon I finished the work, accentuating features here and there to increase its impact. And then it was done. Don't touch it anymore'.

Constructing the Kiln

Soon after the completion of the shaping of the walls, the construction of the kiln began. The pallets with Siporex[22] were brought, as were the metal frames for the roof of the kiln, with the ceramic fiber already attached, and the wood for firing. The process of making Tranchée entered another, turbulent phase with which the artist is less familiar. But that applied to everyone, such a kiln has never been built on this scale and in-situ before. The processes of preparation, exploration, and realisation became increasingly interwoven, but also conflicting and alienating.

Engelfriet continues: 'Thiébaut's main advice was that a five-meter-high chimney would be necessary. If not, the draw would be insufficient. In addition, I had already figured out that side stoke holes would be important, otherwise, only the front part would be fired. He was talking about complicated systems through the roof. I rejected these ideas, but we did make the side-stoke holes in the roof. Furthermore, Thiébaut talked about building walls along the top to rest the roof on. I ignored this idea because I like the orange rim that appears when the roof rests directly on the work: it becomes a very sensitive, wound-like edge. Also, I would have to construct structures in the kiln to prevent the fire from passing through the middle of the kiln very fast. The fire had to be forced to go along the walls, and it would have to be avoided that it would pass right over the top of the obstacles we put in its way. The obstacles would have to be almost as

[22] Siporex is lightweight autoclaved aerated concrete, which is completely cured, inert and stable form of calcium silicate hydrate. It is a structural material, approximately one quarter the weight of conventional concrete, composed of minute calls which give the material lightweight and high thermal insulation properties.

high as the roof. Thiébaut suggested pillars of brick. But we did not have enough bricks and they were not easy to come by. He advised against Siporex, because that would collapse. You can use it if it is only heated from one side, then the Siporex blocks will

crumble on the inside, but the structure will keep together as a whole. He thought that in the middle of the fire it would crumble and collapse entirely. Eventually, we made a pillar of Siporex protected by ceramic fiber, and two curtains of ceramic fiber. Those curtains worked better than expected. Everyone thought the fire would damage them, but they did much better than the Siporex pillar that was too large and massive and obstructed the fire. Later more about this.

Overall, Thiébaut's advice was very important, but I have only partly adopted it. He holds to, as so often with ceramists, a very technical approach. My approach is more direct, as simple and direct as possible, doing it my way; the feeling must be right. The approach to the firing should correspond with my approach to the clay as much as possible. Thinking too technically doesn't fit this notion. Possibilities will emerge in the making, and not by trying to fully control the process. One needs to find the right balance between control and improvisation. Thiébaut conducted the discussion with Romain, I felt excluded, and I couldn't follow it. I should have intervened, and told them to include me in their deliberations. Intervening in such a situation remains very difficult for me. On the one hand, the situation was annoying, and on the other hand, I knew it was important and that it was well-intentioned. Immediately afterward I told Romain that I wanted to do it my way since I aim for a different process, and made clear that a strictly technical approach does not fit my work. He took it very well, and as he told me later, appreciated it. Overall, I lived intense days and the first week of the project raced by.

During my absence in June, Dominique, the local blacksmith, made the frames for the roof. After the hewing of the walls were finished, we could determine their size: 3.70 m long and 61 cm wide, equal to the width of the rolls of ceramic fiber. He made seventeen frames for a more than ten-meter-long roof. Also, the six hundred porcelain buttons that were made by the people of l'Association Expressions, were finished. At the opening of Thiébaut's sculpture in Bar-Le-Duc on June 29th, a box full of buttons was handed to me. Incredibly kind that they did this. Two days of work, with a whole bunch of people. People I had met for the first time only shortly before, who had nothing to do

with the organisation of Le Vent des Forêts. The staff of Le Vent des Forêts fastened the three layers of ceramic fiber to the frames with the buttons and refractory wire.

With the construction of the kiln, a completely different phase began. It was a shock for me to make the transition from the emotional absorption with the clay, being completely connected with it, to this different approach, so quickly; barely having had time to quietly look at the result, to let it sink in, remain in the feeling for a while, to enjoy the pleasure of fulfillment. Suddenly the process becomes purely practical: the thing, which it now is, should be wrapped up and an oven built around it. Trucks are bringing the materials, and many people are coming to help. It all goes very fast. Scaffolding was built on both sides of the trench, to later be able to consolidate the roof in the middle, and to attach a tarpaulin over the kiln in case it rains. It was a rough breach of the intimacy of my work process. *It was a switch to a completely different way of thinking*: the head invents the steps to take in the construction, and the hands, with the cooperation of the rest of the body, carry out what has been concocted by the head. The body is subordinate to the mind. A different way of dealing with the body, a way I do not like. In contrast to the work with the clay, this mode of operation was mutilating to the body. Lifting and carrying heavy Siporex blocks, bricks, sawing, etcetera, without feeling. It must be done, and you work very hard to get it done. I experienced it as more violent to the body than the working with clay in which the body has the lead.

This was by far the most challenging phase, because I don't have any affinity with it, and I do not know much about it either. I was therefore dependent on others. This generated a conflict in me: I was dependent on advice and help from others, but those who brought advice and help are often rather dominant men, who took over the work completely. And I felt sidelined, to put it stronger, in some cases, I was sidelined, I was not listened to anymore. It felt like a failure that I couldn't avoid this happening, that I couldn't hold the lead in some situations. At the same time, I knew that their help and advice were extremely important for the success of the project. A difficult dilemma. This has happened partly because I am a woman, things were continually taken out of my hands, partly because I did not know enough about it. But still, I wanted to do it my way: a couple of times the proceedings were completely taken over, then I found myself in an awkward predicament. I responded to it by leaving the premises, because I realised they were doing a good job. Fighting it would have been bad for the process.

Marc and I tried to build the three Siporex pillars as we planned. The problem was that the trench

was very narrow at the bottom, and we failed in building a stable base of brick that won't obstruct the air passage. In the end, it was only possible in the middle of the trench where the floor was wider, to build a thick pillar, which gradually became wider higher up, so that the passage between the walls and the pillar was not too wide at the top. In retrospect, this pillar was too big and broad and caused great stress during the firing.

We did not manage to build the other two pillars as we had planned, and I had the brainwave while observing the roof, to make a curtain of ceramic fiber by clamping it between two frames of the roof. This worked. Because time was starting to press, the fire needed to get started as soon as possible, so the drying process of the clay could begin: the front wall must be built first, the back wall and chimney can be done later. Late Saturday afternoon I started building the wall, with the aim to kindle the fire the next morning. We had been able to borrow a load of refractory bricks from l'Association Expressions: this was another spin-off of Thiébaut's project and important for the building of a strong and stable front wall. The floor on which the whole wall must rest was very narrow. Yet space for air holes was necessary. I constructed the base with three piles of bricks with two spaces between them for air supply. It goes well for a while, as I built steadily on. Then I arrived at the point where the stoke hole must be constructed. It should be bigger than I am accustomed to in my own wood kiln, as at the height of the firing process more wood must go through it. Fortunately, I thought of that beforehand and borrowed three kiln shelves from Jane Norbury, a friend, and an artist. It was intended to span the top of the stoking hole. The shelves were waiting against the wall.

The brick wall, which gradually became wider, was not solid enough, the base was too narrow. Just when I finished the stoke hole, the entire left side slumps to the left, splitting the wall in the middle. This brought me on the verge of despair. And it was getting late. I did not have the courage to break down the wall and start all over again. For a moment, my heart sank into my boots. Then, just at that moment, Maarten van den Eynde, one of the other participating artists, happened to drop by. And he immediately came up with the solution to the problem: by laying one of the kiln shelves against the rocky wall of the trench, a strong, flat surface was created, against which the wall then could be propped up. That worked. *Such a moment, when someone shows up out of nowhere just at the right moment and provides the solution, happened to me regularly throughout the project.*

Finishing the wall with Siporex blocks goes fast. Filling up the gaps can be done later. Early Sunday morning Marc and I started the fire. First a small fire in front of the kiln and then we slowly pushed the fire inside. At first, I had some trouble to get it going. Immediately I worried whether the kiln would draw at all. Finally, I succeeded. Now we had to keep this small fire going. It worked, there was smoke rising above the end of the roof ten meters away'.

Comment: Emergent qualities of practice relentlessly kept on presenting themselves. The unremitting flow of miracles and nasty surprises that characterise this story is further deepened in the following parts of the tale of Tranchée, where making the chimney and the firing is narrated. As the ancient Dutch proverb indicates: 'the dish is not the menu'. Letiche et al. discuss these emergent qualities, or emergent coherence, in terms of miracles and nasty surprises. In their words: 'Context is crucial. Measured coherence demands a context of stability. Emergent coherence entails finding stability in the context' (Letiche et al. 2011: 6). This crucial stability in the context is well portrayed by Marc Higgin: 'The actual building of the kiln came together organically, almost miraculously, over the three weeks of the project and the work of many different people: Engelfriet and the Vent des Forêts team, but also the participation of local people and the enthusiasm, skill, equipment and materials they brought to each working day, from diggers and angle grinders to lovely lunches and wine' (Higgin 2015: 62).

Building the Chimney

Engelfriet continues: 'There must be a gap at the bottom of the rear wall which we builded with Siporex blocks. To span the gap, I had wanted to use the last of Jane's kiln shelves. But the Siporex blocks were very heavy. The weight of the wall might be too much. Romain suggested that we built an arch. We had bricks to do so and we decided to go for it. Marc drew the arch shape on Siporex, I sawed it out and we used this to create the arch. The bottom sides of the bricks should touch each other, and the wedge-shaped spaces between the bricks were filled with a mixture of sand and clay. I immediately had a hunch that it was too small for the huge kiln. I should have held on to that hunch. Marc did not think so and we finished it as it was. I didn't trust the mortar if it shrinks, and clay does shrink, despite a large amount of sand mixed in, then the wall might collapse. In the evening, I explained the problem to Yves and Ariëlle, with whom I was staying. Yves told me to call him if we did not manage to solve it. I didn't know then how skilled he is. I thought he was a stonemason, like his son Olivier, but that turned out not to be so. He has been a forester. But he is very skilled at this kind of work. I accepted his offer and asked him to come and help. He strengthened the mortar by tucking small bits of stone between the bricks, so they were well anchored and would not budge. Yves and Marc builded the back wall with the Siporex blocks. A very precise and tough job. We had hung a piece of plastic at the back of the kiln, which we left open at the top, so the smoke could get out there. It helps to some extent, but it remains smoky. Marc plugs the hole of the arch with plastic, so the smoke won't come out there. Then, he starts to build the base of the chimney around the opening of the arch. He spends a lot of time to get it really level on a bed of sand.

Accidentally, Christophe, the photographer from Bar-Le-Duc, was present today, and he took a picture of the hole and the base of the chimney and send it to Thiébaut. Apparently, he kept Thiébaut informed. Thiébaut appeared to be calling Philippe all the time to keep informed and give advice. I am difficult to reach. Moreover, I constantly suffer from my hearing that suddenly deteriorates tremendously, so I hear almost nothing, something that has happened before.

Thiébaut had seen the image of the beginning of the chimney and sounded the alarm. He e-mailed and rang Pascal, Romain, Philippe, who was at the Tranchée, me too, but I only read my emails now and then, to say that the hole and the base of the chimney were far too small, that the hole needed to have a diameter of at least 50 cm. *This emergent intervention saved us and the project.* Otherwise, the firing would have failed, there would not have been enough drawing to get the temperature high enough. He let us know through Philippe that we should make holes in the Siporex blocks above the arch and that the base of the chimney should have a circumference of at least 50 cm x 50 cm. Poor Marc, hours of work at the base for nothing. The following day, Marc and I designed, drew, and calculated how we were going to build the chimney, and into what pieces we will have to cut the Siporex blocks to do so. Cutting by hand was not an option. Someone phones Yves to bring an electric saw. When he arrived, he immediately began to saw on his own, without listening to our plan at all. We had devised a system. We made a base of two layers of Siporex blocks as a trial and intended to repeat it like that, layer upon layer.

This was a moment when everything was taken out of my hands. Yves goes his own way entirely, did not listen to me at all. I was furious. He and Marc brought the blocks that he has sawn to the back and began to build. I could see that his approach was working, but I also felt that I was about to burst into tears out of anger. This was not exactly a good idea, so I walked away. I went for a walk and I realised that all this time I had not even walked to the end of the path, I had been on that spot all the time and I was exhausted. I must take some distance. I was furious with Yves, cursed him, and found him a brutal dictator, he even looked a bit like Mussolini. I felt something violent in him. However, as regards the chimney he saved us and eventually I realised that very well. He knew what he was doing. Ultimately, it was the same as how we had designed it, but they measured it again after putting on one layer and only then sawed the blocks for the next layer. And this was the right way to proceed because the back wall was slightly lopsided, and the size of the blocks that were placed against the back wall was different for each layer. In our system, there would have been gaps and we would have been obliged to saw new blocks or fill the gaps. Anyway, the chimney stood at the end of the day. I had told them that I needed a break and had gone away for the day. At the end of the day, I went back for a look and Yves came to me, aware that he had made

me angry. He explained why he had done it like that. I thanked him for his tremendous help and told him he had saved us with the chimney. So, it was resolved.

Again, on his own, Yves had decided, while building the chimney, that it was not necessary to make additional holes in the back wall. So that wasn't done, against the advice of Thiébaut. And the chimney was finished. What's the point of making the chimney wider when the hole through which everything needs to go is too narrow? The next day, Thiébaut would visit the site. We waited for his judgement. And indeed: holes in the Siporex blocks of the back wall were necessary, just above the arch. The chimney had to be taken down again. I should have consulted Thiébaut much sooner about the size of the hole. I should have called him. I had been kicking the question around in my head all along. All of this could have been avoided. We should also have called him when we were still working on the arch. Why didn't I do that? Why this reluctance to call? I did not find it easy to communicate with him. He is overpowering as a personality and gentle and shy at the same time, that intimidates me.

Marc drilled a square. Still, a hassle to get it out, what I managed to do eventually, hanging upside down in the bottom part of the chimney. We also had the presence of mind to pull the plastic out of the hole, which had been forgotten. The chimney was soon rebuilt. The hole from which the smoke has escaped until now, at the top on the right, was closed, and, lo and behold, a fantastic plume of smoke rose straight up from the chimney. It worked! Fantastic draw. Now it's all going to work out! A great moment: ça marche, ça marche! On the way home, I said to Marc: now Tranchée is a whole, now it is right, the womb of the trench has come together with the chimney, the mighty phallus. He laughed aloud. Much later he told me that just at that moment, during the completion of the chimney, he had received a message from his girlfriend that she was pregnant! I didn't know it then. What a bizarre moment.

Apart from some small things still to do, like closing gaps, I could finally turn my full attention to the firing. A different process yet again, a process in which feeling comes first again, sensing the fire, finding a rhythm in stoking. Wonderful!

During the period of the building of the chimney, the fire had constantly been fed and the temperature kept around one hundred degrees, day and night, to allow the twenty tons of clay to slowly dry. During the day I mostly did it, in between other things.

For the night Romain managed to find volunteers. Lou and his friends spended a night there and had a great time. Young firemen had been firing for two nights, in two different groups. With the first group, it went well, but the second group made a mess of it. I had sensed it when they arrived, lanky adolescents full of testosterone. They became very drunk. But they still managed to keep the fire going. By then Céline was staying in the caravan that had been placed next to Tranchée and she took over firing in the early morning. And there were many others who had taken on the stoking during a part of the night, always with at least two people present. I tried as much as possible to sleep at night because otherwise, I would be too exhausted for the final sprint. One morning I took over at five in the morning and that really did me in. That was the day with Yves and the chimney.

Thiébaut and his children came and stayed from Wednesday to Thursday. He noted that a lot of moisture was still coming out of the clay, when holding a pan above the chimney it misted over. But he thought that the temperature could go higher now, so that the clay at the back and at the bottom could also dry, the temperature there being lower than what the pyrometer[23] told us, and the front was dry now. So, we threw more wood on the fire. He almost sealed the air supply at the bottom, and opened some of the holes higher up, so that a bed of glowing embers could start to build up. If the air comes from below, it burns away the embers. Throughout the stoking process, the air holes were only half open. Incredible, that huge kiln, burning on so little air. That meant that the draw was huge. And I shouldn't add wood too sparingly. He put on a lot more than I did, to build up the heat. From the front, one could see that at some place a large piece of the wall came loose and had fallen. Later it turned out to be a piece of the lower part, which had fallen over. But miraculously, the bulk of the clay remained in place! We were not yet able to look further down into the kiln as we had not yet made the stoke holes in the roof, but in front of the kiln the clay was dry, and it looked very good. The drying is, as regards the falling down of parts, the most worrying phase. I was also afraid of the pieces of lime that have gotten into the clay in many places, which might explode. We did not know how the limestone of the walls was going to behave. Someone said it will explode if it meets fire, somebody else said it wouldn't. It didn't happen. But there were a lot of worrying and uncertain aspects in the process, uncertainties which could cause everything to go wrong. I did not know how the clay would behave in the drying and firing process, I did not know whether this huge kiln would work.

As the week progressed, it became increasingly difficult to find volunteers for the night. In the remaining part of the process, the people who had been asked by Thiébaut or who I had met in Bar-Le-Duc, did it. On Friday Pascal (2)[24], ceramist and friend of

[23] A pyrometer is a type of thermometer used to measure high temperatures.

[24] This does not refer to Pascal Yonet, the director of Le Vent des Forêts.

Thiébaut, and François came to help. Pascal, an experienced wood firer, stokes quietly all afternoon. François, a terrific worker, became completely absorbed and stoked the whole night through, all by himself. On Friday, I moved to the caravan. There are two of them now, so I could sleep there and be present all the time'.

Firing Tranchée

Engelfriet continues: 'Yesterday had been an indecisive, messy day. Everything felt like loose sand. There were too many people, children were in the way. Concentration was impossible. Everyone did whatever they felt like. There was an energy dip after the completion of the chimney. I felt exhausted, had no energy left. Romain could no longer find people for the night. It wasn't going well. The dinner tables were terribly in the way, I had to squeeze past people sitting in the middle of the walkway. The distance to where the wood was stocked was long and to inspect the pyrometer, you always had to walk through the entire trench and back along the top to where the pyrometer was stuck in the roof.

And there were still all kinds of small jobs that had to be done: the chains needed to be fastened in the middle of the roof, and the roof suspended on metal rods to prevent it from collapsing at high temperature. A certain kind of screws was needed that were not there and had to be fetched. The holes had yet to be made in the roof, and a possibility to put lids on them had to be created. I realised that something had to happen. *I realised that I had to take charge of the remaining firing process.* I decided to be on the premises day and night and to sleep in the caravan. Fortunately, some people left: that created space and peace.

On Friday, Pascal (2) did most of the stoking. On Friday morning, finally, no more steam came from the chimney. We decided, to start to raise the temperature slowly. Meanwhile, I had attached the chains. Friday night, Marc and I fired the kiln and experienced the magic of the first pinky rose glow of the walls. The dark matter now pulsing, warmly glowing, nearly translucent. It was a magical moment, one of the finest and most moving moments of the process. Occasionally people came to watch. Babette and the two girls, with large eyes, full of wonder. Françoise and her friend from Bar-Le-Duc, who came to watch regularly, arrived at eleven o'clock in the evening for the night shift. I stayed with them for another hour and then I went to sleep in the caravan until five o'clock in the morning.

Saturday arrived, the day of the official opening. All the other artists had finished their projects. I had agreed with Pascal and Romain that Tranchée would not be finished at the planned time. Opening the kiln had been announced as an event for Sunday, but because the drying of the clay had taken longer than planned, this was not feasible.

Everyone agreed that it would be foolish to rush it now, after all the hard work. The firing would continue through Sunday and the public was invited to witness the proceedings. Eventually, on Sunday, just as with Thiébaut, there was nothing to see. On Saturday, we were going to raise the temperature to more than twelve hundred degrees Celsius, with the intention to maintain this temperature for a prolonged period: this would provoke different melting effects in the clay. But, yet again, an unexpected encounter caused a change in direction of the process. The wife of Jean-Louis, of Tuilerie Royer, where the clay came from, attended the opening. Of course, she came to have a look at the trench as well. I informed her about the plan to try to bring the temperature well above twelve hundred degrees Celsius. She immediately dismissed this idea – i.e. such a temperature will turn the clay black. She cautioned to keep the temperature at eleven hundred degrees Celsius because that is the right temperature to unleash various beautiful colors.

That afternoon everything goes very well. The temperature rose steadily. At about six p.m. we reached over a thousand degrees Celsius. This means, though, that it is probably much higher in the front section of the kiln. The pyrometer was situated quite far to the back of the kiln. I was afraid that in front everything would be overfired and would start to melt, and that we would have to stop firing while at the back of the kiln the clay would not yet be fired. By then, the holes had been made in the roof. I decided that it was time to see if we could stoke through the holes in the roof. It should be so hot, that if you drop in a piece of wood, it ignites immediately. That was indeed the case. We started by stoking through the first hole in the roof. That went well. One pulled up the lid with the lifting system made with pulleys, and the other dropped thin pieces of wood into the hole, which, indeed, ignited straightaway. A very beautiful sight and fun to do. Gradually, we proceeded with stoking through the second and the third hole. I had asked Marc, who was firing down at the front, inside the trench, to stoke very moderately, so that the temperature wouldn't rise too high there. The idea was to bring the heat more to the back of the kiln, so it would be more evenly distributed throughout the kiln. This course of events resulted in the most difficult and decisive moment in the whole process'.

A Lull in the Storm

Engelfriet continues: 'At the end of Saturday afternoon, the rise of the temperature came to a standstill and then started to decline. I had entrusted the firing at the front to Marc and asked him to stoke moderately. Because I was busy stoking the holes in the roof, I did not check what he was exactly doing. Meanwhile, Fernand had arrived, also from Bar-Le-Duc. The kiln was so huge that it was difficult to keep an overall grip. I focused on the stokeholes in the roof. We tried everything: putting in more wood, less wood, only thin sticks. One pulled up the lid, the other tossed the wood in, we worked in twos or threes.

At a certain point, we noticed that there were eddies beneath the last stokehole, whirls of smoke turning around on themselves and that there no longer seemed to be any draw. Between the third stokehole and the chimney, I had constructed a platform of bricks on which the small sculptures that children had made, were placed. The platform was made in such a way that the air passage wouldn't be blocked. I hadn't considered that under the third stokehole, just before the air tunnel, ash and embers could collect in a heap. As there no longer seemed to be any draw, I concluded that ash and embers were blocking the air passage. With long sticks, we tried to push the heap of ash and coals to the side, but we only managed to get rid of a small part of it. We stopped stoking the third hole, expecting that the coal would burn away, but to no avail. The firing seemed to have stagnated along with the whole kiln. The temperature no longer rose above eight hundred and fifty degrees Celsius.

I panicked. If we did not solve this situation, and the uneasy feeling had come over me that we were running out of options, the project was bound to fail. Just at this moment in the evening, when it is dark, the kiln looked spectacular, the roof red hot and there were a lot of people present. It was the day of the opening of the exhibition. A concert has just ended, and everybody came to see the kiln. They blocked the walkways everywhere, stand all packed together in the narrow trench to look through the stokehole, what caused the temperature to fall even more because of the cold air entering. Increasingly, the crowd hampered the supply of wood, and I was stuck on the roof. People started interfering with the proceedings, joining in the stoking. Just at this difficult moment, Pascal arrived, and I demanded that he get the people out of the trench. It was becoming dangerous. He ignored my demand as his interest lay with the public aspect. We continued stoking, while I frantically tried to find a solution. I kept gazing into the third stokehole, where I could see beautiful swirls of fire going upwards. We kept checking the pyrometer, which by then was no longer working well. Nothing happens. Total stagnation.

A friend of Pascal said something very beautiful to me at that difficult moment, which comforted me tremendously. She said: 'I know you're very concentrated now, but

I still want to say this: think of Andrei Rublev and his big clock. He finally succeeded in getting the clock out of the ground. You will find a solution!' Instantly, calm and confidence came over me. And suddenly, not long after that, still peering into the third stokehole, I had a brainwave. I suddenly realised that the whirls weren't caused by the air passage being blocked. It was the pillar of Siporex that was so large and wide that it caused eddies to emerge directly behind it. I still wonder how this insight came to me, but it was suddenly present. The reason was not a lack of draw of the kiln, but that the mass of the large Siporex pillar was causing vortices in the stream of fire, just as in flowing water eddies are formed directly behind a large rock. They had appeared only then because the flow of fire had become too slow. And I realised that it was probably because Marc had been firing too moderately at the front.

The fundamental cause of the stagnation was the method of firing. I rushed to check on him. And indeed, the glow had even disappeared from the walls. That meant that the temperature had lowered tremendously. I realised, that I had made a big mistake to have so fully entrusted the firing at the front to him; after all he had no experience with firing. And, as the kiln was so large, it was very difficult to manage the whole, especially from the top. The moment I realised this, I told Marc that I would take over the firing at the front. Afterwards, he told me that he had trouble with being removed abruptly from the scene. The sensation of stoking and the fire had fully gripped him. Fernand pulled us through that night with his phenomenal physical strength, energy, and commitment. He was everywhere at the same time, he was a match for this giant kiln. He looked like he had time-travelled straight from the Middle Ages. He constantly made jokes, talked nonstop, sang at the top of his voice. A force of nature as I had never experienced before. But, yet again, a very domineering man who completely took over from me, told me what to do, treated me somewhat disparagingly, taking decisions without consulting me. Again, someone who took up all the space. Very confronting for me, and I couldn't cope with it. I got very angry inside, but I could not handle it, the force was too big. We were firing the stoke holes in the roof together. I realised that he was doing a great job, and it was very fortunate that he was present. To solve the problem, I decided to take control at the front of the kiln for the remainder of the firing, on my own terms, down in the trench where there was space only for one person. The others would fire the stokeholes in the roof. So, I created my own space, my own place, and ultimately took over the control of the ship. It was a crucial moment and a good decision. I couldn't command and direct the firing from the roof, the kiln was just too big, I could only do that from the front.

In the meantime, François, who had arrived for the night, was taking care of the wood supply. He worked extraordinarily hard all through the night. A huge kiln like this needed a lot of manpower at this stage of the firing. A stage in which a lot of wood is needed to increase the temperature. The stagnation period had also been frustrated

by the crowd, it lasted more than four hours, and lots of wood had been consumed. Almost the entire stock of what was left over from Thiébaut's firing had been burned. I became increasingly worried about the wood supply. If we would have continued at that slow pace of temperature rise, and people had warned me that such a large kiln would be very slow, we would certainly run out of wood. The intention was to finish the firing at the end of the next day, and thus to achieve top temperature only during that day. I knew that neither Fernand nor François could be present, and realised that Marc and I would be exhausted. In addition, we were running out of wood. We had to go for the final stretch this night.

After I took over control in front and significantly increased the amount and pace of stoking, the ship was pulled afloat again. I was confirmed in my sudden insight: the way we had been stoking had caused the stagnation. The kiln regained a terrific draw, the blaze increased, and the temperature immediately began to rise again'.

Blazing to the Limit

Engelfriet continues: 'In addition, another problem that I noticed too late because I had not been checking what was happening in the front of the kiln, presented itself. François had also stoked the front for a while. A huge pile of dead ashes and embers had developed when the firing had been too slow. And this heap was lying so far back in the kiln that it didn't burn away. The thick mass of ash and embers was obstructing the fire. With a very long piece of wood, I managed to pull the ash towards me, to the front of the kiln, so it came to rest close to the air inlet holes and could burn away. This also helped to get the fire going again.

And then the fire started to go like a bomb. I imposed a rhythm in the stoking: first the last hole in the roof, the middle one next, then the one in front, and finally at the front of the kiln down in the trench. This caused the blaze to increase tremendously throughout the entire kiln. François kept supplying wood, both for me down in the trench, and up along the roof. Also, Jean had joined the group working the roof. With an axe, he was splitting the pieces of wood that were too big for the stoke holes on the roof for hours on end. A huge flame came out of the chimney after each stoking round. As soon as the flame started to diminish, the stoking started all over again. I threw lots and lots of wood at once into the kiln. A huge sea of fire wound its way through the ten-meter-long kiln and five-meter-long chimney and came out in a more than three-meter-high flame. What a gigantic, powerful, magical feeling. We must have gone on like this for hours. Time had stopped. I thought it was about an hour after midnight when I saw that the sky was becoming light. An incredible, deep experience to stand in front of that sea of fire, to command it, to feel that enormous force in front of me. I

have no words for it. At the end, Fernand came to help me at the front every time the stokeholes in the roof had been stoked, to push a huge amount of wood into the kiln, as much as possible in one go: he handed the wood to me, I pushed it inside. He just wouldn't stop and could take on the whole kiln with his energy.

At that point in time, I was confronted with the last haunting question: when should we stop firing? Continuing too long would turn the clay black; stopping too early would leave me with a pink clay mass. Of one thing I could be certain: everything had been fired. But to stop at the right moment, would be decisive for the result. We were sitting around the table, daybreak had arrived. The decision was mine. I decided to continue for a little while longer. To blaze the kiln to the limit a couple of times more and then to seal the kiln. When we were finally done, Marc and I wondered aloud how we were going to shut the chimney. We were saying to each other that it would be impossible because the chimney was far too hot to get up there. We had just finished our deliberations when Fernand climbed onto the scaffolding to lie the topmost layer of Siporex blocks on their side in such a way that they blocked the chimney. What a character! The only thing left to do was to close the door with a thick bar and seal it with a mixture of clay and sand. It was done!

On the way back, driving along the road through the fields of ripened, yellow wheat, I felt that something gigantic had happened, that the whole area felt lighter as if something very heavy had been lifted from it. A huge transformation had taken place. Also in me. A major transformation that is still going on. I no longer feel the need to delve further into the war and its remains, to go further into it. It is over, it is accomplished'.

The process of making a work of art, implies the transformation of place, the participants and later the audience, transforming from one state into another in an ongoing process, without reaching a definite, unchanging result. This transformation implies coping with indeterminacy. The work of art includes the process of making and the aftermath, which is, in accordance with the Tranchée story, footed in experiential, emergent coherence. Marc Higgin reflects a year later: 'the forest had begun the slow work of reclamation, grasses and wild flowers covering the bare earth of a year ago,

softening the lines leading into the trench but its rawness still hit me with a shock; all the movement of the work, from the struggle of the bitter fight to the tenderness of a nursing touch, stood there petrified in its greens and greys and reds; a monument bearing mute witness. I walked through barefoot, the recent rains ankle deep, emotion caught me somewhere between curiosity and a nameless unease, between an impulse to run and the urge to look closer, to touch this cauterized skin, scar tissue slowly fading back into the forest' (Higgin 2015: 60).

Emmanuelle Lequeux (2013), writes in Le Monde, about her experiencing the work of art as follows: 'and when, as an innocent visitor, one penetrates these bowels, they continue the story of the archaic ritual that took place'. Romain Barré (2013) comments: 'Tranchée unveils to the strollers a sensitive discovery, an authentic immersive experience between earth and sky. A landscape where burnt matter reveals itself in an archeological precision and lends itself for the reading to the process of creation'.

Frédéric Bodet (2015), Curator at Cité de la Céramique, Sèvres et Limoges, states, reviewing the film that was made of the Tranchée process showing the performative aspect of the work, which should be considered as a part of the work: 'Her performance which was held at a historic site that witnessed the loss of the lives of many soldiers, is a ritual that invokes their spirits. She uses her entire body as an artistic tool to stimulate her viewer's sensibilities and remind them of one of the darkest chapters in human history. (…) Engelfriet's performance, held in the heart of the Vosges, in France, is regarded as extraordinary not only because it involves the viewers in his entire artistic process, but because it actually transforms a geographical feature of nature' (Bodet 2015: 40-42).

Namita Wiggers, Co-founder of Critical Craft Forum, Curator, Writer, and Museum Consultant, writes about the inclusive aspects (artist, participants, place, audience, film) that encompass the Tranchée process: 'The way in which Engelfriet uses her body is neither political nor erotic, differentiating her from artists such as Janine Antoni or Carolee Schneeman, who use their bodies as primary tools in their work. Nor is she performing virtuosity to an audience, as did Peter Voulkos and his peers. Instead, Engelfriet uses the film to emphasize materiality, physicality, endurance, and process. (…) And last, but not least, we observe visitors walk through the bodily-sculptured friezes lining this human-made canyon that stretches about their heads' (Wiggers 2015: 42-43).

In the next chapter, I will reflect on the Tranchée process, informed by complexity concepts and frames that are principal in my research of emergence. I will elaborate on these concepts and frames, in the three chapters following this contemplation.

Chapter 3

Thinking Tranchée

Unfortunately, we have been conditioned to look at art in a format of isolation, detached from the vast complex of interconnected things. Viewing one thing separated from another fails to expose valuable contradictions. (…) When art is considered an autonomous reality cut off from industrial processes and society as a whole, we get a 'world of beautiful illusions'. A gap form between art and work.
Robert Smithson (2012: 49).[25]

But if one looks at the film images longer, one is struck by the fact that where 'ordinary work' seemingly obviously is focused on achieving goals and results, which one automatically searches in the clay project, precisely this kind of practical functionality is absent here. Not that there isn't anything made - we see beautiful forms and traces appear in the clay – but, because these works so evidently are 'useless', and moreover can be washed away by rain anytime, our usual conception of work as being a goal or result-oriented is affected by it.
Mieke Moor (2012: 258-259).[26]

[25] Robert Smithson, 'Sonsbeek Unlimited – Art as an ongoing Development, n.d. (after February 1972), Smithson Papers, Archives of American Art (AAA), reel 3834, frames 875-879. Quoted in, Ingrid Commandeur and Trudy van Riemsdijk-Zandee (eds.) (2012: 49).

[26] This quote refers to an art project in which Alexandra Engelfriet, Torbjørn Kvasbø, Pekka Paikkari en Neil Brownsword participated. See: https://www.youtube.com/watch?v=iyaZtJdUzBs.

Tranchée Dialogues

In this chapter, I will discuss the Tranchée story, by means of the dialogic square of Self and World, which is conceptualised by Letiche & Lissack (2011). This research frame plays an important role in this book. In this case, it shows emergence indirectly through various narratives that interact in the Tranchée story, and thus it reveals the complexities of the process. In chapter 6 the reader will find a theoretical elaboration of the dialogic square. It shows emergence indirectly through a four-fold logic. A four-fold logic that resists the two-fold logic of the 2x2 matrix, which is the showpiece of the paradigm of simplicity (Morin 2008). In the next three chapters (4, 5 and 6) I will elaborate on thinking simplicity, complexity, and emergence. I touched upon three key principles of complexity proposed by Edgar Morin in chapter 1, so the reader has been given something to hold on to. These principles of complexity are further elaborated and explained in chapter 5. The challenge in this chapter is, to take a first step in the unveiling of social complexity and the associated concept of emergence in a playful way: it is an overture to what is coming later in the book. I will start with my first reflections on the Tranchée story, then I will address the events of Tranchée and the story about these events, as narrated from the perspective of the artist, using the dialogic square. In chapter 7, where I discuss the water management casuistic, the dialogic square will again be used to analyse complex water management from the different perspectives of the participating actors.

The account of Tranchée stories the transformation of a Place. A place in a forest that, on the one hand, is marked by the grand narrative of the First World War, and, on the other hand, tells the story of a sculpture park, which, during the past decades, has developed from the initiative of the local community. The Tranchée story illustrates the importance of context, of circumstance, of the local and the specific, of the micro-history of the place – i.e. an account of a creative process by the artist in interaction with matter, residents, experts, and emergence. This micro-history resists 'the once-dominant preoccupation among historians with quantitative social science, the *longue durée*, and immobile history, and it returns to interpreting utterances and beliefs, to describe brief dramatic events, and to envision a past characterized more by abrupt changes than deep structural continuities' (Muir & Ruggiero 1991: vii). The micro-history of the making of Tranchée takes place in the historical context of the macro-history of the horrors of trench warfare that took place over a hundred years ago. The violence is made palpable, but at the same time the site is humanised and pain is mitigated. Violence and mitigation are characteristics of the making process of Tranchée. Simultaneously, there is here a violent and a gentle process.

The tension between the specific and generic of the Tranchée project, in the context of the sculpture park, is palpable in the narrative. The emergent character of the

making process and the generic concept and intention of the making of Tranchée, both strengthen and interfere with each other. The making process shows the complementary, opposing, and contradictory relations between Self - the artist - and the world: residents, soil, clay, wood, Siporex, ceramic fiber, metal frames, food, film, photography, weather, organisation and/or organising. We witness the materiality of the earth, the scarred landscape, and the materials; added to this is the social-cultural dimension, which manifests itself in the participation of local people, adding their knowledge and context.

Simultaneity and seriality are intertwined in a complex, multiple choreography. Firstly, the serial order of phases in the process of making Tranchée: digging the trench, making the sculpture, constructing the kiln, building the chimney and then the firing, displays contrasting phase differences and rapidly changing, emergent contexts. These phases are the rudimentary plan (organisation), while what follows is emergent planning on the go. The starting point was a spam mail with the invitation to participate; the provisional end was the final work. On closer examination, I assert that making Tranchée is a vital link in a continuous chain: the work stems from previous work of the artist, and will continue in subsequent work. The sculpture is permanent because it is fired; but also, temporary, because it changes over time under the entropic influence of the elements, of nature reclaiming lost territory. After its genesis, the actual sculpture also experiences changes by the reception and perceptions of the public. In this sense, the beginning and the end is a human construction. It represents a search for coherence, in which ascribed coherence (the plan) and experienced coherence (emergent planning, see chapter 1 and 6) trade places, and are concurrently antagonistic and complementary. The one cannot exist without the other; but much is uncertain, indeterminate, and ambiguous during the making process.

Additionally, as appears from the story, the position of the artist in the artistic landscape and her artistic ideals play an important role. The artist searches for three-dimensionality, beyond the two-dimensionality of the flat plane, but simultaneously, such ideals are compromised by technical, logistical and organisational factors. The story reveals an ongoing struggle and coping with emergent contexts, a struggle that is part of her artistic ideals: lived emergence. From the invitation to the final work, the die is cast in an irreversible process, in which the artist, the organisers, and the participants at best have a conceptual notion of what the die consists of, and how the die will emerge from the making process. The practical reality of the making process (artistically, technically, and logistically) is a wager.

The Tranchée process is a leap into the unknown, repeatedly entailing coping with disorder which can be understood as both a destructive and a constitutive force. The unknown, which is rooted in uncertainty, is marked by the confidence that the world (context) will offer new affordances, with all its accompanying miracles and nasty surprises (Letiche et al. 2011; Morin 2008). This is an important characteristic

of emergence. The quest for certainty, a central concept in mainstream management, which sails under the flag of efficiency, is reversed here. Intention is directly linked to action and action then leads to new intentions in a reflexive process. The concept and plan are interwoven with the action and the action with the concept.

The Tranchée process is characterised by the relationship between order and disorder, which keeps alternative possibilities open through dialogic interaction. The dialogic interaction between order and disorder - also as a (re-)generating force - provides the possibility of organisation and/or organising. While order and disorder, self and environment, deny each other; they also work together to produce organisation and complexity (ibid.).

The difference in aggregation level, for example between Self and Group (participants) that becomes visible in the various phases of the Tranchée project, reveals the holographic structure of the process of the making: the parts are in the whole, and the whole is in the parts (Morin 1977/1992).

Also, recursive causality becomes visible in the narrative of Tranchée: the self produces the world and is simultaneously produced by the world in return: Engelfriet forms the clay and is herself formed by it in return. Cause and effect are intertwined and not separate and serial (ibid.). Simple linear cause-effect cycles are broken up in the process. Analysing the narrative through the lens of simple linear cause-effect cycles, in other words decontextualising the events, would lead to an extreme reduction of meaning. In sum, the dialogic principle breaks open the notion of certainty, by inviting in, disorder as a constitutive quality that interacts with order.

The Tranchée story shows dialogic interaction between order and disorder, recursive causality, and holographic structure, which are three key principles of complexity (Morin 2008). I will elaborate on these principles in Chapter 5.

The Tranchée process, on the one hand, shows conflict, profound moments of difficulty; on the other hand, pleasant surprises, coincidences, as well as the alternation of the flowing and flagging of knowledge. The making of the sculpture itself doesn't escape from this process either. One slope is made in a heavy battle, the other slope comes to life in a soft and sensitive process. And so, the fragile balance between Self and the Other is revealed. The strong dependence on others in the process - which varied in the different phases - threatens self, sometimes even leading to heavy-handed attempts to destroy, or deny it. In such instances, the process is taken over by others, in temporary chaos, and the artist runs away. Simultaneously, those same others are constitutive forces in the process.

You could argue that in the motto 'Luctor et Emergo, I struggle and emerge', the Emergo is determined by the alternation of the flowing and flagging of knowledge. We witness a non-linear process of knowledge production that at the same time also determines the Luctor and perhaps, and that's my assumption, also benefits the Emergo

(recursive causality). Luctor and Emergo produce each other. The space of possibilities regularly replaces inescapable necessity. The Tranchée story shows the situational of practice and place and the political field that is created in the process of making.

Turning to the Dialogic Square

Insofar, my first reflections on the Tranchée story. Some complexity principles glimmer through. Reader, we have only just begun. I'd like to keep most of the complexity powder dry for the moment. After a few considerations of the complexity concepts that inform the basic dialogic square of 'Self and the World', conceptualised by Letiche & Lissack (2011), I will apply the dialogic square to the Tranchée Narrative.

Creating a work of art is a dialogic, recursive, and holographic process between and within self and world. In this book, I want to investigate the possibilities and impossibilities of emergence. I will try to show emergence in relation to organisation and/or organising, through different storylines. My assumption is that self-world connectedness is emergent. In the Tranchée story, which is told from the perspective of the artist, a couple of storylines are visible, which I will elaborate on, based on the dialogic square. Reflexivity is an important prerequisite for coping with complexity. Reflexivity is apparent in an awareness of emergence, and shows respect for the non-linear nature of the events. Focusing on non-linearity, I make use of social complexity theory marked by the concept of emergence. An important issue is experiential knowledge as opposed to explicit knowledge, that is, the world of simulations, models, calculation rules, algorithms, and protocols. Contrastingly, I will focus on knowing as a concrete, situational and emergent phenomenon.

One can choose to study the significance of order and disorder in relation to social organisation (Morin 2008) – i.e. order, disorder, and social organisation are complexly related through interaction, as we have seen in the Tranchée story. Social organisation without recognition of disorder leads to sterile homogeneous systems, in which no room for novelty is left; thus no change or innovation is possible. Especially when (nasty) surprises emerge and beg for action, an overdetermined order is left empty-handed. On the other hand, overwhelming disorder excludes civil society and creative social organisation. Only when interaction between order and disorder is possible, can social organisation afford change, growth, and opportunity. Therefore, it is important to pay attention to stories and the (tacit) knowledge they embody, in relation to the (formal and informal) narratives of social order (Letiche et al. 2011). The Tranchée story resonates this position abundantly.

Letiche & Lissack have added an action perspective to the order/disorder interaction in organising, trying to make complexity, marked by emergence, indirectly visible by means of a dialogic (semiotic) square. Their square is derived from the semiotic square of Greimas that aims to reveal the structure of language, while the square of Letiche & Lissack focuses on discourse and lived speech (Letiche et al. 2011: 223). If we study an issue from different perspectives and contexts, we do so from three possible complex relationships according to Letiche & Lissack and Morin.

The basic dialogic square, informed by research in practice, which research coherence between self and world, shows complex relations - complementary, contradictory, and opposing - between four factors: Self-Group-Environment-Emergence (see figure 6). Self and Group have a complementary (or not) relation; Environment and Emergence have a complementary (or not) relation. Self and Environment have an opposing (or not) relation; Group and Emergence have an opposing (or not) relation. Self and Emergence have a contradictory (or not) relation, and that holds also for the relation between Group and Environment.

Dialogic Square of Self and World
(Letiche & Lissack 2011)

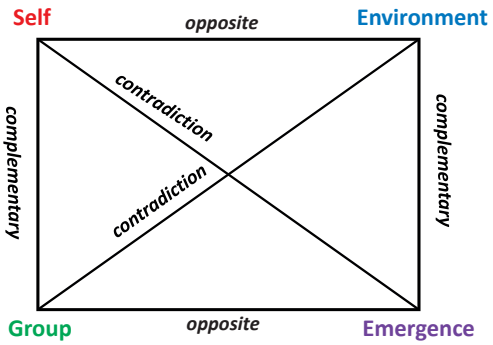


Figure 6

The addition of 'or not' means that these relations are context dependent, not absolute: 'Coherence is thus, not only a reflexive and shared experience but also one that is contextualised. The experience occurs in, and refers to a specific environment, and is related to a limited number of persons and places' (ibid.: 194). Between self, group, environment, and emergence, a process of sense-making takes place in the midst of the tensions between ascribed and experiential coherence. Emergent sense-making, includes awareness of shifting contexts and perspectives of different participants, *in* an event as the making of Tranchée. Between self, group, environment, and emergence,

both changes in aggregation level take place, and differences in knowing. In the wording of Letiche & Lissack.: 'What goes on between self and group in the area of language is known. It is as close to obvious as possible. What's embodied between the self and the environment is (reasonably) knowable, that is, you can probe it because it is concretely embodied. Analysis reveals a significant measure of understanding between self and the physical world. Between the environment and emergence, there is the unknown. The unknown is complex and not merely complicated' (ibid.: 37). The role of narrative, of telling stories, is to create a possibility of ongoing provisional sense-making between the known and the unknown, between the knowable and the unknowable, and even in the ongoing dynamics between order and disorder: 'the answer is that complexity coheres if our narratives let it. Coherence depends on our ability to tell stories that describe self, group, world (circumstance) and change' (ibid.: 39). These initial, concepts will be elaborated in chapter 5 and 6. I will now turn to the Tranchée story, to put some meat on these theoretical considerations.

In the few weeks in July 2013, in which the Tranchée project was completed, organisation and organising were at play. In the first place, there are the people who organise and realise the 'Vent des Forêts' sculpture park project in a yearly cycle, under the direction of Pascal Yonet. Each year several artists are invited to make of a work of art and are supported in doing so. The artistic ideal of Vents de Forêts is simple. Marc Higgin puts it as follows: 'For Pascal Yonet, the Director, the ethos behind the project is one of an encounter between artists, local people and the lived landscape in the process of making and engaging with works of art' (Higgin 2015: 60). Artists are explicitly invited to experiment, to go beyond their "normal" practice, to realise something which they have since long aspired to do. Tranchée is a result of this ideal, and the work would not exist without this structure.

I assume that in addition to the Vents de Forêts organisation and her capacity of organising, the Tranchée project can also be understood as a (temporary) organisation and/or organising process. It is remarkable, that in her account, the artist only sparingly talks about the content: the artistic and aesthetic qualities of the work of art, wherewith one should bear in mind that she considers the whole project, the creative process, and its contexts, as part of the work of art. This process didn't stop with the unveiling of the sculpture, this process continues to this day and is part of the artistic development and research of the artist in recent years. Tranchée is an important milestone in this history. This is consistent with the introduction that the editors wrote to the chapter Art, Research, Ecology, written by Max Andrews, in the book about the life and work of Land Art artist Robert Smithson: 'Art is a form of knowledge in its own right, which, as Smithson's work forcefully continues to demonstrate, abandons distinctions between theory and action and between commentary and creation. Smithson allows us to imagine the work of art not as an object, which stands alone or can be confined, but synchronic-

ally, and in a profoundly ecological way. (…) Artworks in this sense are projects rather than objects – it is not a matter of beholding or owning things, but of relating to society and the public domain' (Commandeur & Van Riemsdijk-Zandee 2012: 45).

The concept of Tranchée consisted of a clear outline: 'Engelfriet sent me a rough plan of work by email - dig the trench, cover the walls of the middle 10 meters in clay, sculpt the walls, construct a kiln around it, fire the clay to ceramic, and, finally, deconstruct the kiln' (Higgin 2015: 60-61). Further specification or elaboration of this plan was never made on paper and so the organising of Tranchée took off in accordance with the aphorism of Bent Sørensen: 'All abstractions are simple; everything that is concrete is complex' (Sørensen 2004: 12, quoted in Jones and Munro [eds.] 2005: 111).

Let me start with what preceded the making process. The following correspondence, which gives an impression of the preparation of Tranchée, shows that mainly logistical and technical issues were exchanged and discussed. The email exchange and discussion on site represent the structure of the Tranchée project. In management language, the strategy, and action plan. The email exchange starts with the invitation to participate, which the artist found in her spam box. I will show a selection of this email exchange because with it the Tranchée project had started, the die was cast, which is part of (the making process of) the work of art.

October 24th, 2012

Dear Alexandra Engelfriet,

I send you this mail to inform you of my wish to invite you to participate to the next residence of Le Vent des Forêts, which takes place in France (Lorraine), from 1th of July until 14th July 2013. Le Vent des Forêts is composed of a large forest surrounded by small farming villages, this is countryside 1 hour from Paris by train, where every year, seven artists are invited to make a project a little bit crazy. Le Vent des Forêts is a very unusual place because it brings together the most modern contemporary art and a rural area who has lived for centuries by working the land. The association gives a fee to the invited artists of 1500 euros and buys all the materials needed for the projects; each artist is housed with local families and is accompanied throughout his work by the team of Le Vent des Forêts, on a case by case basis, depending on the project, for instance by a craftsman, residents, volunteers, students (...) I am at your disposal to provide further details and invite you to discover the place. Looking forward to sharing this adventure with you. Bien cordialement, Pascal Yonet.

February 18th, 2013

Dear Alexandra,

I follow your project for Vent des Forêts, so I will return to you regularly. Do not hesitate to do the same, you can easily reach me at this email address. We have several possibilities for the clay, but we lack some information. Some clays are stronger outside than others. If you do not have this knowledge, we will try to work with a geotechnician, to make the choice. Do you have an idea of the amount of clay that you would

need? If it is possible, we can look at different samples of clay on your arrival. Bien cordialement, Romain Barré.

February 19th, 2013

Dear Pascal,

Great to hear that you have found possibilities for the clay! The strength of clay outside depends on, at what temperature it can be fired. Stoneware clay that is fired at high temperatures vitrifies and is not porous anymore, so water won´t be able to get into the clay and make it crack when it freezes. But the way I intend to fire will make the temperature distribution uneven, some parts will be high fired and other parts low fired, some parts will vitrify, and others will be porous. I think this difference will be most interesting in earthenware clay (faïence), which melts at high temperatures. It will give a lot of colour difference and more happening with the clay, parts will start melting and blistering and other parts will remain orange or even unfired. This way, also the erosion process afterward, over time, will be uneven and will give a lot of interesting processes. Some parts will remain permanently, others will slowly disintegrate. I see this process of erosion as a part of the work, to finish it, as it were. What is very important is that the clay will be good to work with, pliable. So, it would be a good idea if I could see and feel samples before choosing the clay. Where will it come from, a brick factory? I could also make some firing tests in my wood kiln. It is difficult to say how much clay I will need without having seen the site because the size of the work will need to fit the place where it will be made. Is it possible to wait with calculating the amount until I have visited the site? If not, I will try to make an estimation. Cordialement, Alexandra.

February 25th, 2013

Dear Pascal et Romain,

As to the amount of clay a rough estimation would be 10 tons. But as I mentioned before it depends very much on the site and what dimensions will best fit the site. But for your talks with the tilery that would be a good amount. Mostly the amount is not the problem, it depends on their production process, i.e. how easy it is for them to get a truckload of unfired clay. The firing of a project like this will be a new experience for me too. It follows from my experience with my trench kiln but will be much larger. So, I will have to inform about this with some experts. The biggest issue to solve will be the roof. Probably some sort of thermic blanket will be needed for that, and a frame to keep it in place. I will need some firebricks to build a front wall. I think the best would be if I would combine my visit to Fresnes-au-Mont in the beginning of April with a visit to Thiébaut Chagué, who lives in the Vosges, on the other side of Nancy. He has 40 years of wood firing experience and has also done large firing projects. He visited my place last summer to see what I am doing with my trench kiln and I am sure he will be interested and willing to think about the best solution and maybe even help with the firing. I will get in touch with him. Until later, all the best, Alexandra.

March 5th, 2013

Dear Alexandra,

We collected some information about the clay, that I will share with you. We have a contact with a tilery in Champagne-Ardenne, less than 1h30 to Fresnes-au-Mont. This is the first possibility, others exist. They have a quarry and are quite willing to welcome us. Their clay is fired at 1000-1100°C. It seems to be closer to earthenware in terms of texture and physical properties. It has the needed plasticity, is fattish and flexible! (…). See you soon, Cordialement, Romain.

March 6th, 2013

Dear Romain,

That sounds very good indeed! Plasticity, fattish and flexible, that should be ideal. No need to make a mixture of clay, if this is as good as it sounds. If you want to know before the beginning of April whether this is the right clay for me, then you could send me a sample. But I can also see it when I come and see the place. I will probably be able to try out a larger amount that way and will be more able to make a proper judgement. There will be no time to let the work dry before firing, so I think a day and night of slow firing to dry the clay will probably be necessary and then another day and (part of the) night for the real firing. For the slow firing some hardwood, like oak, would be suitable as it takes more time to be consumed. A couple of stère's[27] might be needed. For the real firing, pinewood would be good. (…) But the whole of the firing I would like to discuss with Thiébaut Chagué before deciding on anything. (…) Something else that will be needed is somebody with a digger to dig out a trench-like excavation of which I will form the walls with my clay. This excavation will at the same time function as the kiln. Cordialement, Alexandra.

April 11th, 2013

Dear Romain,

I was just about to write to you. Thanks a lot for the great weekend! I much enjoyed exploring the terrain of Le Vent des Forêts with you and Pascal and meeting some of the residents. Looking forward to the further development of the project. Yes, I did visit Verdun and its battlefields. It made a big

impression on me. The extent of the area that is completely transformed in a moon landscape by millions of bombs and trenches is unbelievable. And now, mostly overgrown by wood, which seems to grow very well on this fertile land. Gruesome and fascinating at the same time. Standing on the scars, brought it home to me that this has really happened, which remains utterly incomprehensible, nevertheless.

I have tested both the clays. The clay from the tilery is fantastic to work with! It is soft and supple, just the right consistency. Beautiful colour green when raw, which is good for the film. The clay Guy showed us is good as well. Fatter and more compact, which means it would need sawdust mixed with it, to prevent it from exploding during firing. The clay from the tilery seems quite open of itself. I think it would be a lot of work to make the heap of clay right for work: it needs soaking, then kneading, then letting it dry, while regularly kneading it, until it has the right plasticity. For an amount of clay like this it would be a lot of work, but possible if a machine would be available for handling the clay. At this moment, I don't know what colour it fires, which is also very important. It won't be until later this month that I will be able to fire it to find out. So, I would say we should go for the tilery clay if they are able to deliver the amount needed. Because I think more than ten tons will be needed. I think the right size for the piece would be: between eight or ten meters long (that would be the size of where the walls are covered with clay, before and after that the trench could slowly become deeper and then slowly go up again after, maybe become wider at beginning and end) and at least two meters high in the middle. If we take an average thickness of twenty-five centimetres, that makes five cubic meters for each side. Together ten cubic meters. Which is a bit less than twenty tonnes of clay. Is the tilery able to deliver that amount? Eighteen to twenty pallets, a ton each. It might be too much, but better than too little.

[27] A Stère is a cubic meter of wood.

Sunday morning, I spent some inspiring moments on the site, the first one we visited, that we envisaged as a possible site for the project. I think it is a fantastic place for it! I very much hope that the soil is good for digging. (…) By making the walls slightly sloping, the light will fall into it from the side, which will be very beautiful. I think this would be a great spot for it. The one next to it has the trees at the back as a kind of arena, which creates a feeling of space. Also, good. Maybe an idea to test the ground in both places. Furthermore, there are a lot of heaps of wood lying about. Quite rotten so maybe there are few calories in it for burning, but they might be used? There are lots of them. I think the text of the catalogue is very good. (It will be 20 tons instead of 10!). That's all for now, have a good weekend. Bien à toi et Pascal, Alexandra.

And so, the outlines of the project are sketched. The suggested studies (for example soil analysis) were never made: this is the plan, and what followed was the emergent implementation of the plan. *What strikes me, is that this greatly resonates with my experiences in organisational consulting and intervention. Despite the large investments in making elaborate plans, and all the textbook project management ideology, experienced practitioners know that the menu is not the dish that is served.*

From email dialogues and the Tranchée story, one may gather that the organisers of the project did not really have an idea of what they were getting into but gradually became increasingly enthusiastic. Engelfriet knows partly what she's talking about, but also hints that the scale, and especially the construction of the kiln on that scale, and the firing thereof, is uncharted territory for her as well. Each stage, as is also apparent from the Tranchée story, knows many indeterminacies: can the trench be dug in this ground; it must be right in one go. Will the clay hold on the walls or will it fall off during the creation process, or later during the drying and firing; will one succeed to construct the kiln and chimney in such a way that the kiln will have enough pull, so the long firing process will be successful; will the soil be able to stand the high temperatures, and will there be enough wood? And so on and so forth. All these issues and many more, are, as it turns out, uncertain, new for everyone, but irreversible. And finally, will the artistic ideal, to give the sculpture the intended three-dimensionality, and to give the viewer the experience of the creative process, which the artist, especially on this scale, has in mind, be realised? What also shines through in the email exchange, is that for all parties concerned, this leap into the unknown, leaving the beaten path, is essential for the project. The Tranchée project is a leap into the deep end, with an almost sacred trust of everyone involved in a successful outcome, without articulating what the outcome exactly is.

The leap into the deep is also a leap into three-dimensionality, which the artist has in mind with the making of Tranchée. A leap which doesn't appear out of thin air, but knows a long running start in the many years of developing her art practice. The artistic ideal here is to make the emergent process visible for the viewer, and especially for the

viewer to experience it. It is above all about the artistic process, and not merely about the final sculpture as such. The final sculpture is the expression of the process and is meant to transmit the experience of the making to the viewer, through the traces left in the clay by the body as well as by the fire.

The guiding principles and ethos of making the work of art were as follows: 'Awareness of clay as a natural material, which is animated by all kinds of forces, is at the heart of the processes I engage in during the making of a sculpture. Direct physical involvement with a large amount of raw clay takes one out of an object directed way of thinking and invites one into an experiential approach of the material. Without preconceived ideas about the result, the physical, performative aspect of working with clay is emphasized and so new possibilities *emerge*' (Engelfriet quoted in Damsbo & Sørensen 2011: 70-74). The artistic research question is: 'What does matter do to me when I don't try to master it but on the contrary let myself be overwhelmed by it and surrender to it (…) Through repeating movement, a trancelike state is evoked in which the border between inside and outside is dissolved. Form and content, matter, body, and mind merge in a dance with clay' (ibid.). In the context of a masterclass Engelfriet held in Denmark entitled 'Materiality – Body as Tool – Ceramic Heritage as Matter' Karen Harsbo commented about the artistic goal of Engelfriet: 'It is to employ a keen sense of immediacy and direct physical interaction with vast quantities of clay to successfully move participants away from an object-oriented approach, opening them up to a purely sensuous experience of the material' (Harsbo 2015: 13). Afterwards, a participant of the masterclass said: 'The week was full of very special, deep experiences that I cannot properly express in words' (ibid.).

The Dialogic Square of Tranchée

I drew up a dialogic square of Tranchée, based on the Tranchée story. Four factors are placed in it: The artist (Self), the participating people (Collective), the emergent process of making Tranchée, and the artistic ideals (Clay) found in the project (see figure 7).

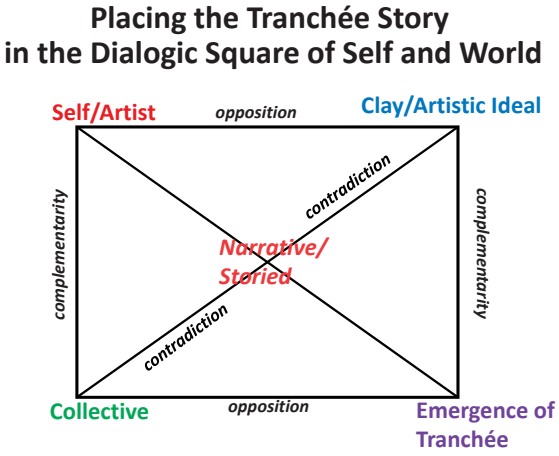


Figure 7

In comparison with the basic dialogic square of 'Self and World' (see figure 6) Self in the Tranchée square represents **the artist**; Environment represents **the clay in relation to the artistic ideals** of the artist; Group represents **the collective of people** participating (invited or accidental) in the project; Emergence represents **all the occurrences that eventually culminated in the work** itself (Tranchée). As I already mentioned, I will elaborate in chapter 6 on the dialogic square, which in this book is an important research framework, and on how you can use it to create a better awareness of emergence (complexity).

I will now first describe the four factors in the dialogic square of Tranchée. After that, I will break down the four factors into four trilemmas: a trilemma shows the interaction of three factors. In each trilemma, one of the four factors will be put in the background, based on the events in the Tranchée story. This, to familiarise the reader with the dialogic square. In all four trilemmas, three complex relations (opposing, complementary, and contradictory) are simultaneously present. They trade places regularly, without disappearing. Trilemmas break the dichotomy of the dilemma and thereby break open the binary, opposing nature of thesis-antithesis. I will return extensively to this issue, dilemma versus trilemma, or two-fold versus three-fold, and eventually four-fold logic, in the following chapters. It is important to note that by introducing a third or a fourth factor in a dichotomy, complexity (i.e. dynamic context, ambiguity, and multiplicity) is better respected.

The first factor is the artist (*Self*), who, during all phases of the project, is confronted by a collaboration paradox with the world (*Collective, Environment, Emergence*). The paradox is that the artist, on the one hand, needs the world to make her work, but on the other hand, the world regularly thwarts her artistic ideals and project's process. There

were challenges in the preparation, digging the trench, in the making of the sculpture, in the construction of the kiln, and in the firing of the sculpture. There was in effect a logistic order that determined the structure of the project. Of course, it would have also been possible to alter this order, to first create the work and then dig the trench, or first fire and then build the kiln. That would, in a Dadaist, Monty Python-like manner, be an art critique of the contemporary management rhetoric and practice. But that was not the intention of the project, nor of the artist.

The phase in which the artist stood firmly in her identity and leadership, was during the shaping of the clay, the making of the artwork. In this phase, her artistic ideals, identity, craftsmanship, and the material, corresponded. Here she was 'sure' of what she was doing, and; knowing and acting became one. This was a portrait of emergence and of being passionately grounded in one's activity. In all the other phases of Tranchée, her dependence on the often-accidental presence and participation of others was in the foreground. An interdependency in which the complementary, opposing, and contradictory nature of the four factors of the dialogic square, and their relationships, traded places. Order and disorder, in a complex choreography, lead to organisation and/or organising, and the threat of collapse of the project hung as a shadow over the process of making Tranchée.

The serial nature of the structure (digging, making the artwork, building the kiln, and firing) was broken by the emergent events, which particularly emphasise the parallelism of the process. Although the border crossings between the different phases can still be clearly marked, the events and actions in the different phases increasingly acted upon each other and thereby showed capriciousness. The artist who in fact was in charge, director and conductor of the project, was, during the process, put in recurring ambiguity, indeterminacy and faced by the paradoxicality of her leadership and ownership of the process. A leadership that was ruthlessly discarded several times, and even wherein she was excluded. I'll return to this point later, bringing the self in relation to the other factors in the trilemmas to the foreground.

From the account of Tranchée, several contexts come to the surface. I will demonstrate this by describing an important trilemma (Self, Collective, Tranchée), with an occasional excursion to the other trilemmas. Indirectly this will demonstrate emergence and a possible, plausible reality will be constructed.

The second factor is the *artistic ideal* of the project: *Clay* in relation to the artistic ideals. In the first place, this entailed the search for a third dimension in the clay. A search in which the classic studio, where an artist makes works of art in solitude, is abandoned. That happened years earlier in the Wadden[28], and later also in the clay

[28] As part of "Kunstmaand Ameland 1998" I worked for 6 weeks in the flats of the Waddenzee, the inner sea of the Netherlands. In the six hours that the tide was out, I made vast sculptures, which, when the tide

quarry of Marlhole (Stoke on Trent, England), in Norway (Ringebu), and in Tasmania (Hobart). Engelfriet is a sculptor who regards clay not only as her material, in the way a painter uses paint, but more importantly as a primal matter, which she experiences, and to which she surrenders herself. She has a lot of experience working with tons of clay. The twenty tons used in Tranchée were not new to her. During the phase of creating the work, she was on familiar ground. And she was not dependent on others. According to Emmanuelle Lequeux in Le Monde, it was: 'A dance of a brute' (Lequeux 2013). For Engelfriet, this part of the project, as well as the firing, was the most pleasant, in contrast to the other phases. Here she is in her element. In all the other stages, the fight that was waged was also a battle with the unknown, especially because of the unprecedented scale of the firing. And for the support troops, above all, it was a baptism by fire, a debut.

In 2008, the artist dug a trench-kiln in the garden next to her studio in St Martin de Salencey in southern Burgundy (France). This trench kiln was originally used to fire the work she had created in her studio. Gradually the trench kiln itself became her studio where she investigated three-dimensionality further by experimenting. And now, an opportunity to realise this artistic ideal of achieving three-dimensionality on a large scale had appeared out of thin air in her spam box. Both the Marl Hole project and the project in Tasmania, as well as all the other large-scale projects she realised up till then, had been ephemeral. What remains of these projects are films, photographs, and precious memories. Now, for the first time, the possibility was offered to her to make a 'permanent' sculpture at the place where it was created.

This provided the possibility to realise her second artistic ideal, namely the wish to convey the experience of the creation of Tranchée to the viewer. The process of making entailed both the shaping of the clay, which left imprints of her body and movement in the material and the firing, which, apart from transforming the clay into (relative) permanency, accentuated the relief and textures created by the body. This process, in turn, left its traces, and it opened the possibility for the process to become part of the experience of the viewer, as transmitted by the fired sculpture.

When opening the kiln, a passage into the interior of the earth is revealed. Slowly one descends into the flesh of the earth and enters the narrow passage between two high walls full of body imprints and cracks; this in a wide range of colors in fired clay, from soft pinks to scourged dark grays. The traces evoke physical presence so that the viewer can identify with the creative process. The association with the violated, charred, and

turned, were swallowed up by the sea. To work in the hard sand off Ameland, a spade and dogged labour were required. In the Dollard, near Groningen, where I spent 2 months as an artist-in-residence at Gallery de Boer-Waalkens during the summer of 2000, the seabed consists of soft silt in which I eventually immersed my whole body to shape the material. During the next 2 years, I returned regularly with filmmaker Carrie de Swaan for the making of 'Tracks in the Flats' (See: http://www.alexandra-engelfriet.nl/projects.php.).

dismembered bodies of the war that raged in the surrounding area a hundred years ago is inescapable. But the fire has also brought out the soft and sensitive, the touch as if the sensitivity of the inside of the body has been turned outward. One descends as it were into the pain, at the same time one experiences the formative powers of body and earth, a gripping and transformative experience. The experience of body and matter has now become the experience of the viewer: "For Engelfriet, a significant outcome from firing Tranchée is what she calls 'the double aspect of performance: the registration of the making and the registration of the firing, and as a viewer you pass through it slowly, so that's another kind of performance, the viewer also performs': It's not just my experience, it becomes an experience for the viewer and that's what I have always been looking for. The film is one way of recording the process, but I have always been looking for the feeling that it's in the clay; the experience is transmitted – you can feel it by looking at the work" (Dahn 2015: 51).

Because working with clay and firing it, Engelfriet walks the fine line between the contemporary art world and the world of ceramics; the latter overall cherishes pretty rigid and craft-based traditions, an artistic ideal that clashes with that of Engelfriet. She has also - finally - entered the age-old world of wood firing, a world also full of conventions, rules, and traditions. From the Tranchée story it appears that on the one hand, she looks lovingly at all these traditions; but on the other hand, is more interested to integrate the firing process in her own approach to making art. Her way of engaging with the clay and firing emphasises the emergent qualities of that process, and the opportunities that it offers to experiential coherence for the artist and the public. A sculpture that comes out of the firing with cracks, or even has become fragmented by explosions during the firing, doesn't upset her. These are, after all, part of the emergent outcomes of a deep involvement with the process. A process that continuously is an interaction between the artist and the material and vice versa. In her words (I repeat): 'I saw how unsure he was, kept repeating what had gone wrong, and was afraid he would not be able to suspend it in the chapel. I said that I liked the cracks and scars, as they are part of the firing process, and that, as it kept together as a whole, there was no reason not to be able to suspend it. Perhaps he could strengthen it here and there. He eventually succeeded, but unfortunately, he has tried to hide all the holes by applying gold leaf to them. That has, in my view, somewhat spoiled it. It shows a different way of thinking: the ceramic way of thinking, in which cracks and the like are perceived as a failure, rather than to be accepted as part of the process, especially with this type of firing processes. A strange contrast.'

The third factor is the *collective*. In the Vents de Forêts art project, one of the pillars of the project is the involvement of local craftsmanship, workforce, love, and attention. This is partly the result of the history of the origins of the Vents des Forêts project

in the 1990s. It began as a local initiative of a couple of village communities around the sculpture park, which then slowly professionalised; what, among other things, consisted of attracting Pascal Yonet, a professional curator, and his assistant Romain Barré.

Without the presence of a strongly committed local population, it would have been impossible to make Tranchée. The sheer scale of the project and the many indeterminacies screamed for participation. On the one hand, the Vent des Forêts engaged the tilery and the filmmaker; on the other hand, a couple of specific experts were approached and engaged by the artist. Especially, expertise that had to do with the construction of the kiln and the firing thereof was needed. Marc Higgin, as personal assistant/researcher, became deeply involved in the project. The expertise was (partly) already sought after during the preparation process. In addition, a lot of people, who presented themselves during the making process, got involved accidentally. Strangers, who appeared out of nowhere, regularly played a crucial role. The coincidence of the experience of Thiébaut Chagué's firing prior to the Tranchée project was also of great importance. And finally, during the whole process, a typical French cooked lunch was brought to the site every day, for which ample time was taken by the team present at that moment. A team that regularly changed in its composition.

The fourth factor is the emergence of *Tranchée*. Tranchée is much more than the final sculpture that resulted from the process, it is the cumulating of all kinds of emergent processes that ultimately lead to what remains as a residue. In the words of Higgin: 'As an anthropologist, I could not help reading how this art-as-event – as a kind of emergent ritual and as an enduring work of art – brought out and made visible the social and material relations, allowing new social, physical and emotional connections to take form and to persist in this place' (Higgin 2015: 62).

This is in line with the artistic ideals of the artist, to which she holds stubbornly, despite conflicting and paradoxical factors. The process of making Tranchée is an artistic act, creating a work of art, rather than one of imitating a trench. For many participants, Tranchée is primarily a technical or logistical issue: digging a passageway, building a kiln, and firing this kiln; while for the artist - and several others – it is about the transformation of the site into a work of art. Whereas, for most (accidental) participants it mainly involves solving various technical problems and engaging in a process of their own. I do not want to underestimate the tremendous commitment, genuine involvement, and dedication; but it regularly gave rise to near violent conflicts, paradoxical situations, but also collaboration.

The story of Tranchée repeatedly shows both complementarity and antagonism at every stage. Emmanuelle Lequeux describes Tranchée as a place where enormous forces have interacted. It was a permanent fight with classic elements like earth, clay, and fire, but also with social forces: 'A pagan ceremony, sometimes a Roman camp, and at others

a Neolithic ritual; the reminiscence of a slightly crazy body' in a slightly crazy project (Lequeux 2013).

Tranchée Trilemmas

In the previous section, the four factors that I have distilled from the Tranchée story have been described. In this section, I will, by combining three factors and their complex triple relations, elaborate on the different storylines in the Tranchée narrative. I will focus on the trilemma Self-Collective-Tranchée. The other possible trilemmas will pop up sometimes as a shadow. This shadowing of trilemmas is elaborated in chapter 5, discussing the foreground-background play of the 'rabbitduck', and in chapter 6, where the dialogic square is discussed. The rabbitduck shows that a factor that is pushed, or kept, in the background, can pop up in the foreground – i.e. foreground and background are connected and interact.

I will contemplate on the relations between three vital factors in the Tranchée project (see figure 8). Three forces that interacted in varying relations of concerted action, in contradiction and opposition. This resonates with the constitutive force of disorder. We can observe the ongoing clash between order and disorder in the Tranchée story. The story tells a tale of a slippery, tortuous trail, full of ravines. The story also shows many moments of miracles, excitement, perseverance, and trust in the process. Absorption in, and/or, refusal of context, alternate. Complexity, marked by emergence, entails taking up wagers, accepting uncertainty, and coping with what context presents and affords.

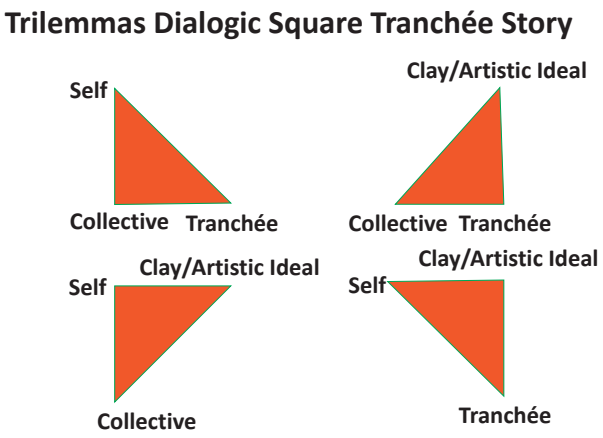


Figure 8

Let me try to deconstruct a Tranchée trilemma. I will follow the meaning that Letiche gives to the term deconstruction: 'By deconstruct I mean showing as far as possible the complex relationships forming the foreground and background to a text' (Letiche 2008: 233). The text is formed by the story of Engelfriet about the Tranchée process.

The trilemma at the bottom right in figure 8 (Self-Clay/Artistic Ideal-Tranchée) shows the *perspective of the artist* (Self) in three relations: complementary (and not) between artistic ideals (Clay) and Tranchée, opposing (or not) between Self and Artistic ideals, and contradictory (or not) between Self and Tranchée. In this trilemma, *the artistic process of the making* of Tranchée is in the foreground. The trilemma at the top left (Self-Collective-Tranchée) shows the *participation paradox* of the narrative in all the other phases of the project. In the trilemma at the bottom left (Self-Clay/Artistic Ideal-Collective) *the struggle over the artistic ideals* is in the foreground. The trilemma at the top right (Collective-Clay/Artistic Ideal-Tranchée) shows the complex dynamics when the artist (Self) has brutally disappeared from the process. Then the artistic ideals - often technically defined – of the collective in the context of the process of Tranchée, come into the foreground.

The Tranchée story reads like a constant trading of places with a foreground-background interplay between the different factors and their relationships. This shows the instability of the various trilemmas and - indirectly - the complexities of the Tranchée process, which become visible in continuous multiple interactions between order and disorder, characterised by a plurality of perspectives.

I focus here on the trilemma that is composed of the three factors **Self-Collective-(Emergence of) Tranchée,** and the interaction of these factors through the complex relations complementary-contradictory-opposite. These factors and relations show different realities simultaneously. They show on the one hand antagonism; and on the other hand complementarity of intention/concept and action, e.g. they show indeterminacy and novelty, which presents themselves in the making of Tranchée. An indeterminacy that is situationally different and therefore cannot be captured in a protocol or a model that simply describes idealised practice.

In the Tranchée process, the artist is confronted with the participation of the local community. As she stories: 'This proved to be the design of the project: the local community supports it, many participate by helping, donating, or lending materials, by deploying their skills to make things, deliver homemade lunches to the site, and by welcoming the artists to their homes. All of this on a voluntary basis'.

During the excavation process of Tranchée, the first two uncertainties appear: will the ground be too rocky, or too soft, so the walls will collapse, and won't too much limestone intermingle with the clay. The managerial question may be asked, whether this shouldn't have been investigated beforehand so that these uncertainties could have been

dispelled. There was no time for that (the digger was not available) and the location was chosen because it was already a clearing in the woods caused by the storm of 1999, and because of the feeling it evoked in the artist. There was no alternative, it had to take place at that site. The specific context of the place forces its constraints on the process. The artist relied on her experiential knowledge and craftsmanship that she had gained over the years, building up to Tranchée. The project is not about reducing uncertainty, but much more about taking a wager, trusting experiential knowledge and sagacity, which is rooted in her artistic ideals. She tried to create three-dimensionality and movement, and at the same time, through the firing, create an experiential context for the audience.

What also becomes visible in the Tranchée process, is what I will call the participation paradox: the field of tension between autonomy and collaboration, between Self and the Collective in the context. The following paradoxical question arises: Is participation determined by the organiser of the participation, or by the participant (Cath, in Dedding & Slager 2013: 170)? Participation is a hydra and a friend, in the Tranchée making process. Let me single out a few remarkable events of the Tranchée story.

Thiébaut Chagué is an important ceramic artist and a highly experienced craftsman in the field of building kilns and firing. He had, partly emergent, a very valuable contribution before and during the Tranchée process. This can be concluded from the story, which also shows that he sometimes contributed at crucial moments. This also applies to several other experts. Here the complementary nature of the relationship between Collective-Self-Tranchée comes first and coheres also with the artistic ideal. Engelfriet (I repeat): 'accidentally, Christophe, the photographer from Bar-Le-Duc, is present today, and he takes a picture of the hole and the base of the chimney and sends it to Thiébaut. Apparently, he keeps Thiébaut informed. (…) *This emergent intervention has saved us and the project'.*

But just as often the artist deviates from the well-meant advice and interventions, which then leads to contradictory, opposing, but also complementary relations in the trilemma Self-Collective-Tranchée. As Engelfriet stories (again): 'Thiébaut's main advice was that a five-meter-high chimney would be necessary. If not, the draw would be insufficient. In addition, what I had already figured out, side stoke holes would be important, otherwise, only the front part would be fired. He was talking about complicated systems through the roof. I rejected these ideas, but we did make the side-stoke holes in the roof. Furthermore, Thiébaut talked about building walls along the top to rest the roof on. I ignored this idea because I like the orange rim that appears when the roof rests directly on the work: it becomes a very sensitive wound-like edge. (…) Thiébaut suggested pillars of brick. But we did not have enough bricks and they were not easy to come by. He advised against Siporex because that would collapse. (…) Eventually, we made a pillar of Siporex protected by ceramic fiber, and two curtains of ceramic fiber. Those curtains worked better than expected. Everyone thought the fire would damage them,

but they did much better than the Siporex pillar that was too large and massive and obstructed the fire. (…) Overall, Thiébaut's advice was very important, but I have only partly adopted it. He holds to, as so often with ceramists, a very technical approach. My approach is more direct, as simple, and direct as possible, doing it my way; the feeling must be right. The approach to the firing should correspond with my approach to the clay as much as possible. Thinking too technical doesn't fit this notion. Possibilities will emerge in the making, and not by trying to fully control the process. One needs to find the right balance between control and improvisation'.

In the second part of this fragment, the trilemma **Self-Collective-Clay (artistic ideals)** appears suddenly. *Here we see a change of trilemma, where the artistic ideal is temporarily moved to the foreground.* The different artistic ideals, and the way of working of the artist and the collective became constricting. These issues can also be connected to the affinity of the artist with the stage of where the project is. This becomes strongly evident after she leaves her natural habitat of shaping the clay and enters the phase of constructing the kiln. Then, the participation paradox trilemma seriously plays up. The fight, but also the dance, with the clay and the gravitational laws of Newton are shattered by an, also for her, partly uncharted territory, where she becomes highly dependent on the knowledge and participation of others. According to the story: 'With the construction of the kiln, a completely different phase begins. It is a shock for me to make the transition from the emotional absorption with the clay, being completely connected with it, to this different approach so quickly, barely having had time to quietly look at the result, to let it sink in, to remain in the feeling for a while, to enjoy the pleasure of fulfillment. Suddenly the process becomes purely practical: the thing, which it now is, should be wrapped up, and an oven built around it. Trucks are bringing the materials, and many people come to help. (…) It is a rough breach of the intimacy of my work process. *It is a switch to a completely different way of thinking*: the head invents the steps to take in the construction, and the hands, with the cooperation of the rest of the body, carry out what has been concocted by the head. The body is subordinate to the mind. A different way of dealing with the body, a way I do not like. In contrast to the work with the clay, this mode of operation is mutilating to the body. (…) This is by far the most challenging phase, because I don't have any affinity with it, and I do not know much about it either. I am therefore dependent on others. This generates a conflict in me: I am dependent on advice and help from others, but those who bring advice and help are often rather dominant men, who take over the work completely. And I feel sidelined, to put it stronger, in some cases, I am sidelined, I am not listened to anymore.'

In this story fragment, the trilemma **Collective-Clay- (Emergence of) Tranchée** surfaces again viciously. A trilemma where the artist (Self) - temporarily - fades into the background and is excluded. Also, the trilemma Collective-Self-Tranchée simultane-

ously crops up, in which the factor Clay (artistic ideals) is put into a tight spot. Here, we witness a flipflopping of trilemmas, changing background and foreground continuously. Showing that what is pushed to the background keeps 'presence in absence' and 'absence in presence' (Spoelstra 2005: 110, Moor 2012: 219). Thinking through making is harshly replaced by making through thinking (Ingold 2013).

Also, the tensions between the specifics of the circumstances and the generic of the concept in the artistic ideals of Tranchée, deserve attention. I observe that craftsmanship (tacit knowledge) was crucial in the Tranchée project for coping with complexity. This is the artistic craftsmanship of the artist and technical craftsmanship of some of the participants. Richard Sennett has connected the concept of craftsmanship to coping with complexity. This is not so much about the ancient apprentice-master relationship, but rather 'to do a job well for its own sake' (Sennett 2008: 9). Consciousness and reflexivity are crucial – i.e. the thinking hand in a dialogic of work, awareness, and practice (Pallasmaa 2009; Spierts 2014; Kooijmans 2016). Sennett asserts: 'every good craftsman conducts a dialogue between concrete practices and thinking' (Sennett 2008: 9). Thus, 'good work of this sort tends to focus on relationships; it either deploys relational thinking about objects or (…) attends to cues from other people. It emphasizes the lessons of experience through a dialogue between tacit knowledge and explicit critique' (ibid.: 51).

In the words of Polanyi: 'the very act of communication displays a knowledge that we cannot tell' (Polanyi 1966/2009: 5). This notion is not compatible with the objectivist ideal of separation between subject and object of positivist (Mode-1) science: 'We are approaching here a crucial question. The declared aim of modern science is to establish a strictly detached, objective knowledge. Any falling short of this ideal is accepted only as a temporary imperfection, which we must aim at eliminating. But suppose that tacit knowledge forms an indispensable part of all knowledge, then the ideal of eliminating all personal elements of knowledge would, in effect, aim at the destruction of all knowledge' (ibid.: 20). The story of Tranchée shows a continuous changing of complexities that reverberates in the interplay of the different trilemmas. The changing complexities reveal themselves in different ways. An example of such a moment, where responding to the specific circumstances is placed in the foreground, and the generic rules and labels are put aside, can be found in the following fragment in the Tranchée story, which deals with the stagnation in the firing process: 'I panicked. If we did not solve this situation, and the uneasy feeling had come over me that we were running out of options, the project was bound to fail. Just at this moment in the evening, when it is dark, the kiln looked spectacular, the roof red hot and there were a lot of people present. It was the day of the opening of the exhibition. A concert has just ended, and everybody came to see the kiln. They blocked the walkways everywhere, stand all packed together in the narrow trench to look through the stokehole, what caused the temperature to fall even more because of the cold air entering. Increasingly, the crowd hampered the supply

of wood, and I was stuck on the roof. People started interfering with the proceedings, joining in the stoking. (…) And suddenly, not long after that, still peering into the third stokehole, I had a brainwave. I suddenly realised that the whirls weren't caused by the air passage being blocked. It was the pillar of Siporex that was so large and wide that it caused eddies to emerge directly behind it. I still wonder how this insight came to me, but it was suddenly present. The reason was not a lack of draw of the kiln, but that the mass of the large Siporex pillar was causing vortices in the stream of fire, just as in flowing water eddies are formed directly behind a large rock. They had appeared only then because the flow of fire had become too slow'.

I assume that sagacity (Metis), which is an aspect of craftsmanship, is connected here to coping with emergence. This provides action perspectives to hold on to when dealing with emergent events. Metis puts the specifics of the practice in the foreground and pushes generic concepts or theories about practice to the background: 'Metis refers to a mode of intelligent action that responds to particular events in the context of identifiable circumstances' (Letiche & Statler 2005: 4; see also Pieterse 2011). Metis is an action perspective that needs to be placed above all, outside Self. In the words of Letiche & Statler: "Metis thus involves a partial abandonment of control – that is, it involves not assuming oneself to be the agent of every solution or the cause of each decision. Following the logic of metis, one cannot will oneself to be the master or organizational fate. Instead, one must accept the intrusion of an imaginative, cunning power that arises from the concrete, practical circumstances. This power apparently 'comes from elsewhere', irrespective of any prevailing analytic rationality, or 'best practice'" (ibid.: 2005: 5). As storied by Engelfriet: 'Yesterday had been an indecisive, messy day. Everything felt like loose sand. There were too many people, children were in the way. Concentration was impossible. Everyone did whatever they felt like. There was an energy dip after the completion of the chimney. I felt exhausted, had no energy left. Romain could no longer find people for the night. It wasn't going well. The dinner tables were terribly in the way, I had to squeeze past people sitting in the middle of the walkway. The distance to where the wood was stocked was long and to inspect the pyrometer, you always had to walk through the entire trench and back along the top to where the pyrometer was stuck in the roof. And there were still all kinds of small jobs that had to be done: the chains needed to be fastened in the middle of the roof, and the roof suspended on metal rods to prevent it from collapsing at high temperature. A certain kind of screws was needed that were not there and had to be fetched. The holes had yet to be made in the roof, and a possibility to put lids on them had to be created. I realised that something had to happen. *I realised that I had to take charge of the remaining firing process'.*

At this moment, the trilemma Collective-Tranchée-Artistic ideals, where Self seemed to have disappeared, gets pushed aside and the artist takes control again. The trilemma Self-Tranchée- Collective is restored. The relationship between emergent

qualities, in this case of the Tranchée process, in relation to the different levels of aggregation, here Self and Collective, are described by Letiche & Statler as follows: "Emergent qualities are characterized by changes at a different order of scale. In complexity theory, emergence is often understood in terms of shifts in aggregation levels—for instance, when a group in an organization suddenly behaves in a way that a single exceptional individual has already been acting, the whole situation can radically change. The shift from the aggregation level of a single individual's behavior, to that of a group's collective action, can make a crucial difference. Emergence is episodic—systemic continuity is broken and something new emerges. The roots of emergence are often grounded in unique, specific actions. And in the dimension of organizations, metis pertains to the amplification of apparently minor shifts in action, which lead to major systemic changes. (…) When so-called 'weak signals' are amplified, it can make a truly qualitative difference for an organization (Letiche, 2004b). Change (often) starts with such 'weak signals'—that is, with individual behaviors grounded in personal sense-making, undertaken in concrete circumstances. Those 'weak signals', which are assisted by metis, seem to emerge most easily and frequently from puzzling circumstances (Baumard, 1999). Metis gets its chance when there is confusion in unresolved circumstances, and a lack of clear direction" (ibid.: 2005: 7).

Thereby, also the relationship between emergence and Metis, as an action perspective, is clarified. The reader may conclude from the above that Metis is not a new tool in the toolbox of the manager. In the above, I extensively discussed the trilemma Self-Collective-Tranchée of the dialogic square of Tranchée, also showing that from time to time other trilemmas popped up, and I will leave the choreography of the other trilemmas in relation to the Tranchée story to the imagination of the reader. In the water management casuistry that I discuss in Chapter 7, I will walk through all the trilemmas and their multiple interactions.

On Provisional Balance

I can imagine that the reader is left with some questions and that some degree of confusion is his or her share. Please grant this exploratory hitchhike in the landscape of social complexity, and the significance of emergence in organisation and/or organising, some more time. The shared adventure has only just begun. In the following chapters, I will further elucidate, not only as a guide but also as a marveled fellow traveler.

In the next steps, I will go deeper into what various social complexity thinkers have developed in the way of concepts and research models during the past decades. I need to give an important warning. Those who expect, or even hope, that the book will provide, bit by bit, a new management recipe, a toolkit instrumenting emergence, will

be disappointed. It would be a contradiction in terms. By the way, it wouldn't surprise me if the first business cards with 'emergence manager' or 'complexity controller' are already at the printers. Those who crave new recipes of their leaders and gurus, I suggest that they rush to the bookstore where an exuberant display of such menus of the high priests of the management church are in stock, which gives answers to the main question and instrumental framing: (How) can we design our organisations so that they yield successful outcomes (Stacey 1996)? It will have dawn on the reader that I am mainly interested in another framing of the question of organisation and/or organising, an interpretative framing: (How) can we give meaning to our experience of life in organisations through context (ibid.)?

My concern is the epistemic quality of emergence, the solace it might offer and the vital challenge it presents for managers and those that study organisation or life in organisations. In the words of Letiche & Lissack: 'emergence is perhaps the greatest unmet challenge facing managers, organizations, and those who study them. In our drive for greater efficiency, we have ignored emergence' (Letiche et al. 2011: 17).

Second Part

Theoretical Trilemma

Research that thinks, *is research that describes, examines, reflects, and theorizes the circumstances, conflicts, and possibilities, which it studies. Bad research just rationalizes them. Rationalization presents events as if they were causal, ordered, and inevitable, with scant justification for what it claims. Criteria of judgement are hidden or non-existent, the researcher is* unthinking.

Hugo Letiche & Geoffrey Lightfoot (2014: 103).

One of the strongest claims of the scientific revolution is that science provides an objective and better description of the natural world than other ways of knowing. However, the 'real-world' of human affairs seems to us to be different than the world simplified by science – we experience it as complex, or more complex than the world and the issues that are usually addressed by 'normal science' and its methods. For a long time, complexity has been ignored by classical science, in which scientist described an objective world following deterministic laws. But we live embedded in 'situations of complexity'. As a result, we increasingly become aware of manifestations occurring in natural and social phenomena for which traditional epistemologies based on mechanistic explanations are no longer valid (…) Furthermore, the (re)introduction of complexity into scientific discourse has raised issues, the significance of which goes far beyond its scientific interest, since they might determine the way we construct and engage with 'real-world' problems.

Sandro Luis Schlindwein & Ray Ison (2007: 231-232).

In contemporary Western societies, the interpretative dimension of this human knowledge is not generally recognized as the interpretation is confused with a description of an objective reality. (…) Every aspect of human knowing – also known as interpretation – is linguistically filtered, contextually grounded, power-saturated, implicated in a particular social process, shaped by particular narrative forms, and inscribed by tacit theories about the nature of reality. The smell of complexity permeates these dynamics.

Joe L. Kincheloe (2004: 87).

Organisation and/or Organising Trilemma

In the previous chapters (Tranchée) a story has been discussed in which the complexities and emergences of the everyday reality of organisation and/or organising become visible, in the context of the process of creating a work of art. Subsequently, a first reflection based on the research framework of Letiche & Lissack, derived from the dialogic square of Self and World, was given. I will now discuss, in three, related, chapters, several salient theoretical complexity concepts and confront these concepts with mainstream organisation theory. In this part of the book, we start our climbing expedition in Morin's Complexity Edifice, based on the following organisation and/or organising trilemma (see figure 9).

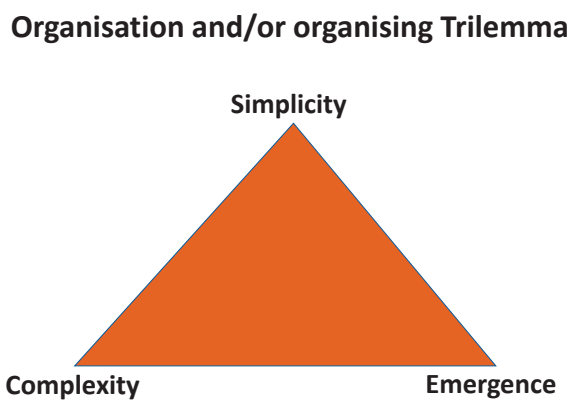


Figure 9

The starting point is the paradigm of Simplicity facing its opposite, the paradigm of Complexity. The concept of paradigm is described by Morin as follows: 'a paradigm is made up of a certain kind of extremely strong logical relation between master notions, key notions, key principles. This relation and these principles command all propositions that unconsciously obey its empire' (Morin 2008:39; Morin 1991; Morin 2004: 236-238). The dilemma between Simplicity and Complexity is broken open by adding a third factor: The Emergence concept and the relationship of this concept with the two other paradigmatic positions (Morin 2008: 39; Morin 2004: 236-238; Morin 1991: 211-238). In this way, the Organisation and/or Organising Trilemma transcends the mutually exclusive epistemologies of simplicity and complexity or an 'Epistemic Civil War' (Popolo 2007: 214) with the Emergence concept. This epistemic civil war between

simplicity and complexity, and their relationship to the third-factor emergence, will be elaborated in the context of organisation theory, in the following three chapters.

Organising and/or organisation are to be understood as a process of sense-making according to most authors of management and organisation textbooks and articles (e.g. Clegg et al. 2016, Stacey & Mowles 2016, Northouse 2016). Sense-making concerns sorting out the world through identities, using framing, making assumptions about rationality through rationalisation, and achieving instrumentalisation through models, protocols, recipes, rules, and narratives. Sense-making in relation to organisation and managing can be captured in the ideology of managerialism:

> 'Managerialism is a belief in the right and knowledge of managers to be able to manage. It occurs when a special group, called management, ensconces itself systematically in an organization and claims a monopoly of decision-making power (including the distribution of emoluments) – and justifies its monopoly on the grounds of the managing group's education and exclusive possession of the codified bodies of knowledge and know-how necessary to the efficient running of the organization. The belief in management as a means capable of solving any problem elevates the necessity of management into an ideology of the modern world' (Clegg et al. 2016: 39).

Management and/or managing is reserved for a special class that operates by (pre) dominating input and output. Input and output are based on plans and planning, and their associated models, protocols, prescriptions, auditing, labels, and rules, ascribed by the management class. What happens in the black box of organisation and/or organising, i.e. the complex practice in between input and output, is kept in the background. I will now zoom in on two fundamentally different epistemological positions and their underlying assumptions, in the dilemma between organisation and/or organising informed by the managerial paradigm of simplicity or the alternative paradigm of complexity.

The process of sense-making can, initially, be considered from a simplicity or a complexity position. A simplicity view reduces reality to a predictable linear, orderly world, including the apparent multiplicity and disorder of phenomena and events, which conceal a few simple laws and principles. This is a worldview which regards emergence as a surface phenomenon, as an obstacle, which at the most, indicates weaknesses in our (still) incomplete knowledge. Morin calls this the paradigm of Simplicity. Facing it is the paradigm of complexity (Morin 2008). In the latter, a complex epistemology is followed where 'uncertainty, indeterminacy, surprise, contradictions emerge, not as residues that can be removed by explanation, but as irremovable ingredients of our perception/conception of reality. The elaboration of a complexity principle requires that all ingredients that ruin the principle of simplifying explanation feed a complex explanation' (Morin 1990: 251-252). The dominant formalism and the hegemony of the quantifiable in

the sciences, where anything that cannot be formalised and quantified is put between brackets, i.e. the paradigm of Simplicity, is rejected by Morin: 'It is to have come to believe that what was not quantifiable and formalisable did not exist or was only the foam of the real. A delirious dream because nothing is crazier than abstract coherence' (ibid.: 175). Complexity is not an exceptional surface phenomenon, with underlying clear and closed laws and principles, complexity (emergence) is an in-depth structure and principle itself (Morin 1990; Letiche et al. 2011).

I will dwell on an important difference between the paradigm of simplicity and that of complexity. That difference can be captured in the terms 'complicatedness' and 'complexity'. The difference between complicatedness and complexity comes down to the following: 'Complexity is the study of effects with weaving (complex). It is to be contrasted with the merely complicated (complic, meaning with folds). Although the complicated can be unfolded for analysis, the complex cannot' (Letiche et al. 2011: 12).

I assume that a meaningful distinction can be made between complexity and complicatedness. Sea, coast, rivers, and estuaries are complex, especially when you look at their morphology. Interactions can be seen at many aggregation levels of continuous adaptation. Ecologies and social systems are complex and adaptive. Complexity, marked by emergence, is a natural phenomenon; it is essential to life. Complicatedness, however, is not natural, but a human construction. Our technical inventions and constructions are complicated, but the social organisation to devise these technical inventions and implement them, are complex. Complicatedness is the result of the organisational and technical resistance to complexity, entailing a search for the perfect machine or the one best way. Mostly, we reduce the complexity of issues to something simpler, something that we can control. Then we confuse uncertainty with risk: 'An overly narrow focus on risk is an inadequate response to incomplete knowledge. It leaves science vulnerable to the social dynamics of groups — and to manipulation by political pressures seeking legitimacy, justification, and blame management. When the intrinsically plural, conditional nature of knowledge is recognized, I believe that scientific advice can become more rigorous, robust and democratically accountable' (Stirling 2010: 1029). But, in a complex sphere of activity, our simplified images supported by models, rules, labels, protocols, and standards, make our work increasingly complicated. Ultimately, complicatedness then drives out complexity, and complexity returns as unexpected events, dilemmas or even disasters.

In the next three theoretical chapters, the two paradigmatic positions, the paradigm of simplicity and the paradigm of complexity, will be discussed separately, after which a third added factor is further examined: i.e. the role which emergence plays in this dilemma as an open-breaking third factor. These, and other important issues related to the organisation and/or organising trilemma, will be developed, deepened and problematised, in their mutual connections, in the next three chapters.

Chapter 4

Thinking Simplicity

The paradigm of simplicity puts order in the universe and chases out disorder. Order is reduced to one law, one principle. Simplicity can see either the one or the many, but it can't see that the One is perhaps at the same time Many. The principle of simplicity either separates that which is linked (disjunction), or unifies that which is diverse (reduction).

Edgar Morin (2008: 39).

Complex situations put a large cognitive burden on us and easily evoke a longing for a defined and structured environment. Since every decision for something is always a decision against something(s) else, cognitive tension only increases as numbers of available alternatives grow. People who grew up in a less complex world, encounter ever greater uncertainties about their own identity and orientation as the complexity of interrelationships increases. We cannot "see" in real time what occurs in the social world, and if we could, we would not have the mechanisms of selective attention to avoid looking at what is not appropriate. Thus, bombarded with possible affordances, we often prefer to retreat into simplicity, routine, and denial, than to face confusion. Many problems arise due to the inherent flaws in this process.

Hugo Letiche & Michael Lissack, with Ron Schultz (2011: 164).

The essential danger is that the very word complexity becomes at once the instrument and the mask of simplification. (…) The worst simplification is that which manipulates the complex terms as simple terms, discharging it of all antagonistic/contradictory tensions, empties its entrails of all their claire-obscure. The worst simplification would be to repeat repeatedly 'everything is complex, everything is hypercomplex', that is to expel precisely this difficulty of concept and of logic that the mission of complexity is to reveal and to maintain.

Edgar Morin (1990: 311-312).

Fundamental Opposites

We will now, in my quest for understanding emergence, start climbing the first staircase of Morin's Complexity building, moving towards the first floor. We will leave the one-dimensional, mechanistic worldview of the one best way that supports at most complicatedness and denies emergence, behind us. We will come across first order systems theory that is two-dimensional: it is founded on the two-fold logic of dichotomy. Also, the dominant management discourse, well founded in first-order systems theory informed by first-order cybernetics of linear feedback, will be deconstructed, focussing on one of its pillars: the 2x2 Matrix.

In this chapter, the simplicity factor – of the organisation and/or organising trilemma – will be elaborated. The above-mentioned quote by Morin describes the paradigm of simplicity in a concise manner: a *reduction* of the complex reality to a principle of order, which only has room for the 'either-or' nature of reality that is represented as a dichotomy (thesis versus antithesis). In this paradigm, there is a separation between subject and object, a separation between micro and macro, a separation between theory and practice, between laboratory experiment and the real world. Simplicity also has a bias towards probabilities versus possibilities, and a bias towards objectivity and universality (Sotolongo 2007: 139-140).

Reductionism is the desire to reduce complex reality to essences and clear linear cause-effect analysis. The highest possible abstraction level is chosen, whereby the quantification of macro-social processes and phenomena is preferred over qualitative micro-social processes and phenomena: "Small in the sense, thus, is what is considered not worthy of being included in the researched reality; what is undervalued in it, not granted credit, remaining 'in the shadow'; what is invisible or not seen, in a word, what 'does not exist' for much social research" (ibid.: 136). An important reason for this is that one cannot aggregate micro-social processes, which are embedded in complex local cultural diversity and knowledge, to a universal collective truth. The main reason for the preference for aggregation is deeply embedded in the underlying assumptions of the rationalist tradition of Western thought, modernity, and the underlying universalist worldview of Reason.

Therefore, let us dwell on this tradition of thought and its basic assumptions, because it has been so crucial for the identity of modern organisation theory – i.e. 'The rationality that formed the basis of the philosophical programme of modernity, was based on three pillars: certainty, systemisability and the clean slate. (...)Especially the last idea, the clean slate, one can always start completely anew, undo the past, reversible time, rests, as we know, on a mistake' (Toulmin 1993: 240-245). Systemisability meets the need, which is a change from the pre-modern, to "organise knowledge into 'systems' (logical systems in the natural sciences, institutional systems in sociology, or cultural

systems in anthropology)" (ibid.: 235). New attention has been given to 'the practical, local, temporary and contextual issues that were close to the heart of the 16th-century humanists, but were replaced by abstract, timeless, universal and context-free issues by the 17th-century rationalists' (ibid.: 252). The search for a rational method that took up a central place in 17th-century western philosophy and science we still find in all kinds of variations to this day. Thus, economists consider rationality the equivalent of efficiency and Max Weber speaks of the rationalisation of social institutions (ibid.:272; Graeber 2015).

This paradigm (simplicity) has a long history in western thought. Its history goes back to the fundamental opposition between the contemporaries (approximately 500 BC) Parmenides and Heraclitus. William Byers asserts: 'The Greek Philosopher Parmenides is reputed to have maintained that you can only speak of what is, "what is not cannot be thought of and what cannot be thought of cannot be." It followed from this attitude that (absolute) "infinity" or even "zero" could not be defined because they "could not be." This attitude is a philosophical precursor to the "naïve realism" of today: the sense that the proper role of language is to enter into a one-to-one correspondence with the objects of the real world' (Byers 2011: 5).

Parmenides spoke in defence of a concept that deeply influenced western thought: order and stability are real, and change and evolution is illusory (Juarrero & Rubino 2008: 2). Heraclitus made an opposing statement: 'We both step and do not step in the same rivers. We are and are not' (Byers 2011: 159; Mansfeld 2006). Heraclitus concluded in the sixth century BC that: 'change alone is real and stability is illusory' (Juarrero & Rubino 2008: 2). The Dutch philosopher Jan Bor has summarised these fundamental opposites, between the simplicity and complexity paradigms, in figure 10 (C. Verhoeven in Bor et al. (Eds.) 1995: 17-21; Cohen 2007).

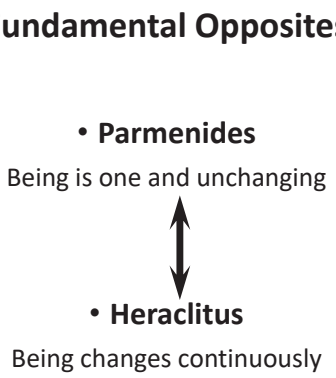


Figure 10

The position of Parmenides is associated with the Paradigm of Simplicity, and the position of Heraclitus with the Paradigm of Complexity. In the West, the Paradigm of Simplicity has been sitting firmly on its throne during the past twenty-five centuries, although the representatives of the Paradigm of Complexity, especially the last 150 years, have been sawing, more or less successfully, at the legs of this throne. The fraternity of advocates of complexity is to be found in a growing number of scientific disciplinary communities, moving to the foreground, the past five decades (Juarrero & Rubino 2008).

I will now turn to describe the Paradigm of Simplicity. Simplicity has a predilection for predictability and order (control). It is about: objective knowledge of objects in the exterior world; quantification of data; reductionism with its focus on parts of the studied system; a search for linear cause and effect laws that determine events (determinism); universal knowledge; a 'one right way' of looking at a situation; either/or thinking borrowed from Aristotle, which rejects any form of ambiguity or paradox (Montuori 2008: xxxi-xxxii, in Morin 2008).

An important aspect is a dichotomy between the subject and object of study, between Self and Other, where the researcher (the subject) is situated outside the investigated system and strictly keeps his distance to the object being studied. This is the research model of the natural sciences which has been developed since Newton and which has been embraced by the social sciences at their rise about two hundred years ago (Agar 2013; Morin 1977/1992).

Another assumption, here, is that the findings in the laboratory (the experiment) can be translated unquestioned to the world outside the lab (Agar 2013). Edgar Morin says the following about this: "The western paradigm, no doubt a fecund child of the schizophrenic Cartesian dichotomy and the clergyman's Puritanism, also commands the

double aspect of Western praxis, on the one hand, it is anthropocentric, ethnocentric, egocentric as soon as it concerns the subject (…); on the other hand, and correlatively, manipulative, icy, with an 'objective' veneer as soon as it addresses the object. This is not unrelated to the identification of rationalization with efficiency, and efficiency with results that are easily inscribed in accounting books" (Morin 2008: 34; see also Letiche et al. 2011; Agar 2013).

The list of critics is much longer, which raises the following question and paradox: what is the reason that the Paradigm of Simplicity, in its denial of complexity, is still firmly ensconced both in scientific, political, administrative and management circles, while the same people increasingly use the word 'complexity' when it comes to problems they are facing? Let me briefly elaborate this question based on a complex problem that confronts humanity: climate change. An example of managing a complex issue, through the paradigm of simplicity will be presented further onwards in this chapter.

The key assumption regarding climate change is that climate change is a 'complex' problem par excellence. Complex problems are also called 'wicked', 'untamed', 'persistent', 'unstructured', or 'polarised'. The terms then designate simple problems 'tamed', 'complicated', or 'structured'. In this book, I will continue to use the term 'complex' or 'wicked' and 'simple' or 'tamed'. In the following chapters, I will extensively go into the nature of complex problems, and will then also dwell on the important difference between complicated, tamed, problems (simplicity paradigm) and complex, wicked, problems (complexity paradigm).

The linear waterfall (see figure 11) shows from the perspective of simplicity how (complex) problems are generally studied (Conklin 2005: 3-5). One works top-down starting with a 'problem analysis – from understanding the problem – and work towards a solution, and then implement that solution. We find this heuristic in most policy documents, strategy notes, management textbooks and project management protocols. The model is averse to the nature of the problem (tamed or wicked) or the context of the problem.

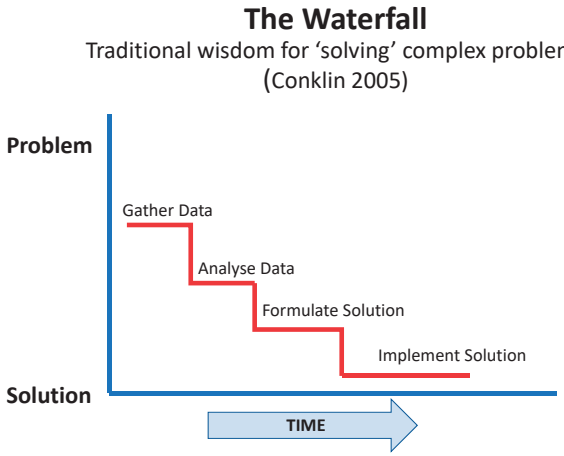
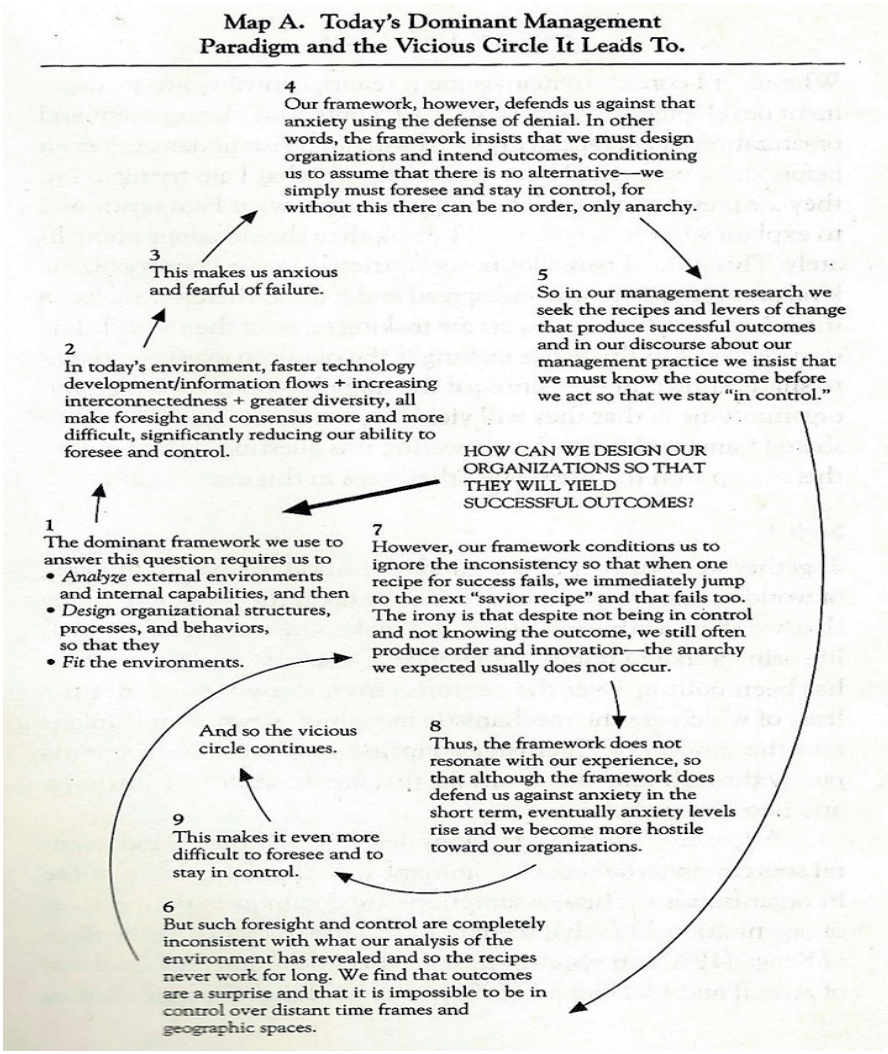


Figure 11

Such heuristics show a paradoxical nature: the more complex the problem is, in one's perception, the more stringent the linear, ordered flow is to be followed. The model shows strong similarities to the serial management cycle, as it is prescribed in most management books: determining (abstract strategy), translation (planning and scheduling), execution (implementation in practice), whereby this cycle is passed on in organisations serially - hierarchically - by different groups (management layers) with different knowledge. The Waterfall also exhibits strong similarity to the conventional scientific cycle.

One can, in relation to the Waterfall cycle, speak of the vicious circle of the dominant management paradigm (Stacey 1996). The vicious circle is a detailed elaboration of the Waterfall. I will illustrate this briefly informed by the figure (Map A), in which a conventional serial way of working in organisations is shown, based on the vicious circle as drafted by Stacey (Stacey 1996: 3). The starting point of the vicious circle of the dominant management paradigm is the design question with which the manager/governor is confronted: How can we design our organisations in a way that they yield successful outcomes? *We* is the management, and *our* refers to ownership of the organisation. The first analytical step (step 1 in the figure) assumes that 'successful organisations are systems tending to states of stable equilibrium adaptation to their market, societal, and political environments' (ibid.: 5). Environmental fluctuations regularly disrupt this balance, and one supposedly should identify those as quickly as possible and get them under control before the competition does so. The dominant management discourse tells us that if we are competent enough and work hard, we can know meaningful facts about the long-term future, and get some degree of control over the developmental process, through the Waterfall model (facts, analysis, vision, implementation). The



dominant management discourse tells us the following: 'If we are to have any order, we had better work out a blueprint for it in advance and put the order there; otherwise we will fall into disorder and anarchy' (ibid.: 5).

The next step (step 2 in the figure) is the observation that we are working in (organisational) conditions that are increasingly uncertain about roles, goals, tasks, and outcomes. This leads to an increase in disagreement about analysis and which action perspective should be followed. The

current reason for this double disagreement is a rapid proliferation of regional, national, and international links (globalisation), which requires a strong increase in diversity in the organisation and/or organising. This proliferation is accompanied by a

sharp increase in technological advances, and, ever faster and greater flows of information via new media. This leads to a strong reduction in our ability to foresee the future, and thus to remain in control, with a resulting increase in alienation and a feeling of uncertainty and loss of identity (step 3 in the figure). Initially, this uncertainty can be partly overcome by the same frame of reference, which, attempts to mitigate (knowledge) uncertainty and disagreement about the direction to be taken (step 4 and 5 in the figure).

This paradoxical situation, that a model of how to achieve control produces more uncertainty, repeatedly gives credence to the latest recipe for organisational success (system optimisation), often provided by the management guru of the moment. The flight from reality leads to all kinds of paradoxical reactions: lip service to the latest saving recipe, while simultaneously doing something entirely different. And confusion, frustration, uncertainty, hostility, and anxiety increase further when it appears that one recipe after another doesn't do what is expected of it (step 6, 7, 8 and 9 in the figure) (ibid.: 7-9).

This somewhat caricatured description contrasts with our attribution of meaning to our experience of life in organisations: 'For a bunch of people who cannot implement the latest general scheme developed by the gurus, who resist change and frustrate our charismatic leaders, and whose blueprints continually disappoint, we produce an astonishing degree of stability' (ibid.: 8-9). The framework, which is designed to reduce anxiety by foreseeing the future and being in control of the future direction of our organisations, is at odds with our *experience*. The ascribed coherence, that the dominant management discourse prescribes, stifles experiential coherence (ibid.: 4-9; see also Clegg et al. 2016; Stacey & Mowles 2016; Letiche et al. 2011). The ongoing vicious circle shows recursive causality, whereby causes produce effects, which in turn produce the causes, like a boomerang effect (Morin 2004; Morin 2008). The vicious circle of the dominant management framework, informed by the paradigm of simplicity, produces an increasingly powerful disjunction between models of practice and experience of practice. To counteract this disjunction, one is asked to believe that there is only one right way of action: to reproduce the dominant framework perpetually. This, because the basic assumptions of the framework are not (are not allowed) to be questioned. That is how a dominant management discourse, based on simplicity, becomes self-sustaining and produces ongoing sameness.

Let me dig somewhat deeper into this issue, based on my own experience in organisations: I noticed repeatedly that the vicious circle of the dominant management discourse, generated a continuous production of, metaphorically speaking, 'cold welds' (welded junctions), which were installed between the different phases of the organisation and/or organising processes (Geldof 2001; Cath et al. 2010). We talk about a 'cold weld' when explicit results from one phase are 'thrown over the fence' in the transition

to a new phase with a new arena of actors. Think of the interface between science and policymakers, or the interfaces between different hierarchical management levels. Cold welds are applied to organise the interfaces, and this is done by explicitly prescribing in detailed procedures, which intermediate results need to be realised to go from the initial to the next phase. Planning is to make explicit what requirements the intermediate results must meet and how, when, and by whom they should be 'pushed across the interface'. The objective is to codify in detail the human interactions in the organisation. It appeared to me repeatedly that the checklist approach, with its excessive focus on the explicit requirements employees, must meet, leads to a striking lack of reflexivity of the (organisational) complexity that must be handled in, and around the organisation.

In other words, the demands that the formal organisation puts on organising prevail, and simplification, the narrowing of the field of vision, and support for bureaucratic behaviour is ubiquitous. The demands set by the cold weld, become more important than the demands of situational realities. A lot of necessary information and knowledge (context) from the previous phase, does not end up in the new phase. The organisation and/or organising process is detached from its complex context: the subject and object of the organisation and/or organising process have become separated.

An important issue that arises, is that managers, administrators, politicians, and policymakers generically decide about decentralised practices and knowledge. The processes of creating and maintaining cold welds, and thereby the maintaining of the vicious management circle, strengthens the tensions between experienced practice and hierarchical supervision. If additionally, by organisational upscaling, more cold welds are established, the hierarchical coordinating relationships become increasingly problematic. With an ultimate result that management and board can no longer oversee the organisation because they are at an ever-greater distance from it and from the realities of organising (Fournier & Munro 2004).

An ever-increasing simplification, the endless cutting up of the organisation and organisational processes to counter complexity, does not lead to a mitigation of the complex nature of issues in play, but to an increase of organisational complicatedness (Stacey & Mowles 2016; Clegg et al. 2016). I will now give an example of the consequences of simplifying – i.e. domesticating an issue to an ascribed essence (first principle), and choosing a corresponding design for the solution. After the simplification, it is assumed, the problem can be solved by using the linear cycle of the Waterfall, whereby a Vicious Circle results. The universal model doesn't have to consider the nature of the issues nor the context in which they take place.

Climate Change is an interesting example of how a complex issue is managed as a complicated one and therefore, according to Prins & Rayner, humanity has lost precious time to start seriously dealing with it (Prins & Rayner 2007). In the first place, one could

look back on what the Kyoto Protocol[29] of 1997 has yielded, and what the underlying assumptions were, and which instruments have been used to realise the objectives. The main problem of the Kyoto process is that a complex, wicked problem (climate change) was addressed with a toolbox, which had proven to be effective for complicated, tamed problems. With a complicated problem, it is assumed that there are sufficient knowledge and understanding of causes and effects and that one has an adequate and effective action perspective for a manageable number of stakeholders to use. Later in this chapter, I will get back to this issue in relation to the 2x2 Matrix and the instrumentalisation of the dominant management discourse.

An important example of complicatedness was the case of ozone layer depletion by propellants (CFC: chlorofluorocarbon) from, among other things, aerosols. You could adopt, based on knowledge accepted to be certain, top-down measures with clearly defined and measurable goals, where the relevant stakeholders, through a couple of summit meetings, reached an agreement about the solution. In addition, there was available replacement technology to solve the problem. In the words of Prins & Rayner: "Kyoto was constructed by quick borrowing from past practice with other treaty regimes dealing with ozone, sulphur emissions, and nuclear bombs, which, while superficially plausible, are not applicable in the ways that the drafters assumed, because these were 'tame' problems (complicated, but with defined and achievable end-states), whereas climate change is 'wicked' (comprising open, complex and imperfectly understood systems). Technical knowledge was taken as sufficient basis from which to derive Kyoto's policy, whereas 'wicked' problems demand a profound understanding of their integration in social systems, and their ongoing development" (ibid.: V). In the case of complex problems, an approach that might be helpful for tame problems does not work; and often, even, is counterproductive. Tame problems might have end-states, complex problems do not. If all nuclear energy plants are safely shut down on this planet, nuclear catastrophes as in the Fukushima case will be avoided. Prins & Rayner:

> 'What makes a problem 'wicked' is the impossibility of giving it a definitive formulation: the information needed to understand the problem is dependent upon one's idea of

[29] "The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change, which **commits i**ts Parties by setting internationally binding emission reduction targets. Recognizing that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities." The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. The detailed rules for the implementation of the Protocol were adopted at COP 7 in Marrakesh, Morocco, in 2001, and are referred to as the "Marrakesh Accords." Its first commitment period started in 2008 and ended in 2012." (United Nations Framework Convention on Climate Change: http://unfccc.int/kyoto_protocol/items/2830.php.)

> solving it. Furthermore, there is no stopping rule: we cannot know whether we have a sufficient understanding to stop searching for more understanding. There is no end to causal chains interacting in open systems of which the climate is the world's prime example. So, every wicked problem can be considered as a symptom of another problem: the relationships are therefore complex (multi-faceted) in contrast to complicated (multiple, but mono-faceted). If there is premature foreclosure, we may become prisoners of our own assumptions' (ibid.: 14).

The French economist Daniel Cohen wrote in a review of the climate summit in Copenhagen (2009), a similar analysis. With a nod to the film 'Four Weddings and a Funeral', he wrote about three utopias and a funeral in relation to climate change. The climate summit in Copenhagen didn't fulfil the expectations that had been raised. What expectations and utopias were raised? The first, inspired by the organisers (United Nations) of the summit itself, was that a world treaty among all nations could be concluded. The second utopia, inspired by other participants, such as industry and business, was that a technical revolution would get us out of trouble. The third expectation, mainly prompted by the demonstrators, was a reaction to the emptiness of the societal model, which preaches more consumption and abundance as the way to happiness and well-being (Cohen 2010). The demonstrators summoned for a replacement to the Cradle-to-Grave economic model for a Cradle-to-Cradle economy, nowadays also referred to as circular economy or doughnut economics (Raworth 2017); their point of departure the motto 'waste is food' (McDonough & Braungart 2002). McDonough describes the Cradle-to-Cradle design as follows:

> 'The characteristic design approach of the last century was "cradle to grave". It involved digging up, cutting down, or burning natural resources – releasing toxic material into the environment in the process – to make products that became useless waste at the end of their lives. By contrast, [the] cradle-to-cradle approach mirrors nature's regenerative cycles so that at the end of its useful life, a product and its component materials are used to make equally valuable products. C2C thinking does not just focus on minimizing toxic pollution and reducing natural resources waste. It goes one step further, demanding that companies redesign industrial processes so that they don't generate pollution and waste in the first place' (McDonough 2006).

Cohen (2010) observes, that if we do not increase the diversity of approaches and wealth of options and corresponding action perspectives, we will not be able to address the issues. The matter is not to bury the aforementioned utopias, but to provide them with a dose of pragmatism. This pragmatism, among other things, demands that the universal nature of the utopias (macro scale) must be contextualised by acting on different aggregation levels (micro - meso) (Cohen 2010; see also Cath 2011: 95-96).

It is interesting to note that these observations were made over a decade ago. Optimism was still considerable, and the assumption was that untamed problems can be domesticated.[30] I will argue that for wicked problems no final solutions exist and that domestication, as the dominant management discourse assumes, is a contradiction in terms. I will then dig a little deeper into the historical background and assumptions of 'the dominant management discourse', which to date is still firmly anchored in the paradigm of simplicity with its penchant for a 'There is No Alternative' approach (Sotolongo 2007). Some roots of the dominant management discourse will be reflected upon; the quest for certainty (the exclusion of uncertainty), systematising (exclusion of disorder), dichotomy (linear causality), hierarchical structure (command and control linked to serial unfolding processes) and the view that emergent multiplicity is a surface phenomenon that can be ignored.

Thinking the Dominant Management Discourse

The professional identity of Management, which is partly a result of claiming scientific status modelled after the natural sciences, has a tradition that spans more than 125 years. An important feature of the emergence of the rise of the Management class is the ongoing professionalisation at university-based business schools:

> 'The maturation of the management discourse – among many other things – has resulted in a separation of owners (shareholders), stakeholders (employees, clients, other interest groups) and the upcoming and rise of the management class of organisations. (…) Every such community of practice is characterized by a dominant discourse: the most acceptable way to converse, which reflects power relations supported by ideologies. The dominant management discourse is reflected in how managers usually talk together about the nature of their managerial activity. It is also reflected in the kind of organizational research that attracts funding from research bodies, the kind of papers that prestigious research journals will publish, and the kind of courses taught at business schools, in the textbooks they use and in organizational training and development activities. (…) Most communities of practice are also characterized by some resistance to, or criticism of, the dominant discourse' (Stacey & Mowles 2016: 6-8).

The divide and possible antagonism between shareholders, stakeholders, and management is to this day, part of heated debates. I will, with seven-league strides, call to mind the genesis of the dominant management discourse, its key assumptions,

[30] In this analysis, I do not consider the COP21 agreement concluded in Paris in 2015, as its results are not yet clear.

espoused values, and artefacts, connecting it to the paradigm of simplicity and reflect on all of this. The dominant management discourse is supported by several key assumptions which by and large are taken-for-granted. I will show that the dominant management discourse claims to address complex problems, but in fact, denies them. Especially in the last decades, some organisational theorists have made frantic efforts to absorb complexity concepts – self-organisation, emergence, first-order cybernetics – into management theory. In the next chapter, I will elaborate on this from a complexity perspective. I will show that the basic assumptions of the dominant management discourse don't allow an unproblematic transition to another aggregation level (of complexity). Most textbooks, entire bookcases can be filled with them, about Management and Organisation or Managing and Organisational Behaviour (Clegg et al. 2016), Strategy and Leadership (Northouse 2016), begin and end each chapter with the observation that managers, policy makers, politicians, citizens, and their advisers are faced with complex issues. These observations, which in themselves are correct, are generally not elaborated. And what a complex issue is, let alone which concepts and action perspectives are at the service of the manager in relation to complex issues, often are left aside. While most mainstream management textbooks recognise that managerial practice deals mainly with complex issues, the core assumptions of the management models and concepts are saturated with the dominant discourse of efficiency, command, and control, pushing aside ambiguity and paradox; and in general, show a hatred for uncertainty. In sum, denying the complex and holding on to reductionism and disjunction (simplicity). What strikes me is that the concepts and tools that subsequently are provided, have not substantially changed over the last thirty years. Thirty years that cover the time since I graduated from the Rotterdam School of Management to this day.

In the dominant management discourse, several assumptions regarding organisation and/or organising, which are treasured, are merely taken for granted. The hypotheses underpinning management thinking, are hardly tested. We will see later, that these management dogmas are provided with some regularity, with a new coat, often tailored by the guru of the era. What are these assumptions? In the first place, most of the management literature (and practice), assumes that organisations are semi-open systems, which are largely placed outside of human interaction. It is as if they are pre-given structures that dictate organisation and/or organising.

There are, according to Henry Mintzberg (1983), five basic structures that give the best fit for every situation: simple structure; the machine bureaucracy; professional bureaucracy; divisionalised bureaucracy; adhocracy. Depending on the context, an appropriate structure can be applied (constructed) in which 'consistency and coherence between structure and task are, above all, the most important thing' (Clegg et al. 2016: 522-524). The metaphors for these systems, which are most in vogue, are the machine or the organism (Morgan 1986; Morin 1977/1992). A key assumption in this respect

is that managers design, manage and control the machine or organism. In the gentler version of systems thinking, an organisation is considered as an 'as-if' system (Stacey & Mowles 2016). An important assumption is that systems consist of a whole and its parts, which can be clearly designated. Thus, from a management perspective, organisations become primarily design issues and this ontological status is unproblematic (Stacey 1996).

The question what organisation and/or organising is, is thus swept under the carpet. This also brings with it, that it is assumed that a linear causality between the parts of the system and the system, exists. In addition, it is believed that systems have closely defined objectives, which are central to acting; an action which then is refined in detailed task descriptions. A well-known hierarchical triad is: Strategy (strategic choice theory) – Translation of strategy into practice (management theory) – Managing (organisational behaviour). The directors and designers of the system thus determine an objective, and subsequently, the organisation must be strictly managed. One speaks of a 'well-oiled' machine, or a beating heart and lungs of the organisation, in which the management top is the brains and the workplace make up the hands (Stacey & Mowles 2016, Morin 1977/1992, Clegg et al. 2016; Morgan 1986).

I will now first dwell on the great influence that systems theory has on management thinking since the 1950s. An influence which to this day determines thinking about organisation and/or to organising in mainstream management literature.

Thinking Open Systems

Open Systems Theory emerged in the 1950s as a criticism of reductionism and the mechanical worldview, in other words, the paradigm of simplicity. I will focus on Cybernetic Systems Theory (cybernetics) because it has had a deep impact on organisational theory. We can differentiate between first-order systems theory, what introduced the concepts of feedback loops and active organisation, and second-order cybernetics: 'cybernetics is the first science, since the rise of Western science in the seventeenth century, to have founded its method, affected its operational success, and made itself recognised by the other sciences by envisioning a physical system, the machine, not in function of its constitutive elements, but in function of its organizational characters' (Morin 1977/1992: 249). According to Morin, first-order cybernetics doesn't get beyond the paradigm of simplicity, it remains true to its engineering origins whereby negative feedback (command and control) is paramount, and ambiguities and positive feedback are suppressed: 'Cybernetics fundamentally lacks a principle of complexity which would allow the idea of disorder (…) There is neither essence (which is an advantage) nor existence (which is a deficiency) in the cybernetic grasp of the living being,

which becomes very serious as soon as cyberneticism claims to interpret and treat life, man society' (ibid.: 251).

Second-order cybernetics (New cybernetics or cybernetics of cybernetics) attacks the Cartesian simplification of strict separation of object and subject. Second-order cybernetics reflects on the observer in the observation. Second-order cybernetics also introduces disorder (often as entropy) – i.e. as an active force in the conundrum of the interplay of parts and the whole of systems. We will later see that this entails a concept of an opening (towards the environment) and closing of the object (production of Self) through self-organisation and/or self-organising. Other important aspects of second-order cybernetics include contextualisation and recursive feedback loops. I will now throw some light on first-order cybernetics, and its lasting influence on organisational theory. In my view, first-order cybernetics has found the holes in the paradigm of simplicity, by trying to squeeze through the gaps and cracks. Second-order cybernetics has blown up the notion of closed order.

Ludwig von Bertalanffy (1950) is one of the founders of the General Systems Theory. His project cannot just be seen as a breach with the mechanistic worldview, but also as the breaking open of the strict separation between the different scientific disciplines: it is a plea for interdisciplinarity. In addition, the mechanistic concept of closed systems is broken open and replaced by an open systems concept. In the words of von Bertalanffy: 'In consequence of the predominant development of the physical sciences, it was thought that it (science) had to be reduced to physics and chemistry. This is, of course, the methodological principle of the so-called mechanistic view' (Von Bertalanffy 1950: 224). Open systems are characterised by an exchange of matter and energy between the system and its environment, in other words: organic systems, living organisms. Additionally, another important principle of cybernetics is feedback. This mainly concerns feed-back directed at preserving homeostasis: 'those processes through which the material and energetical situation of the organism is maintained constant' (ibid.: 230). Also, the concept of entropy, a measure of disorder, which applies only to closed systems, is elaborated for open systems by Prigogine (ibid.: 227). Von Bertalanffy asserts: "The direction of happenings in closed systems is towards states of maximum entropy since, according to the second law, entropy must increase in all irreversible processes. But this is not true in open systems. In an open system and especially in a living organism, there is not only a production of entropy due to irreversible processes, but the organism 'feeds', to use an expression of Schrödinger's, 'from negative entropy' (…) Therefore the total change of entropy can be negative as well as positive" (ibid.: 231; see also Morin 1977/1992). According to Schrödinger, the living organism avoids decay (entropy) through metabolism (eating, drinking, breathing, and assimilating). In his words: 'everything that is going on in Nature means an increase of the entropy of the part of the world where it is going on. Thus, a living organism continually increases its

entropy – or, as you may say, produces positive entropy – and thus tends to approach the dangerous state of maximum entropy, which is death. It can only keep aloof from it, i.e. alive, by continually drawing from its environment negative entropy – which is something very positive as we shall see' (Schrödinger 1944: 72-80, quoted in Juarrero & Rubino 2008: 201).

Thus, some substantial rocks have been thrown through the windows of the reductionist worldview, attacking the idea that all phenomena are reduceable to elementary parts of a whole. In addition, an attempt has been made to bridge the gap between the different scientific disciplines, especially between the natural and social sciences. I will get back to this in the next chapter where (social) complexity stands central, a worldview that is indebted to the above briefly touched upon concepts (order and disorder, feedback, the entropy principle, the importance of contextualisation), and where the followers throw a few extra-large boulders through the mechanistic windows.

Below, I will dwell briefly on Cybernetic Systems and System Dynamics theories as these concepts have had a profound influence on management thinking and organisation theory. First-order cybernetics is the cybernetics of observed systems, while second-order cybernetics is the cybernetics of observing systems (von Foerster 2003: 303). Key concepts in first-order cybernetics, familiar to those who read mainstream management books, are the following:

> 'Organisations are *goal-seeking*, *self-regulating* systems, adapting to pre-given environments through negative feedback. (…) It feeds back on itself to repeat its behaviour. (…) There is an external point of reference according to which it is controlled. The system internally *represents* its environment and then responds to that representation. There is a clear boundary between system and environment, between inner and outer. (…) *History is not important* in that the current state of the system is not dependent upon the sequence of previous states, only on the 'error' registered at the regulator. (…) Any change must be designed outside the system and then installed' (Stacey & Mowles 2016: 73).

From the 1950s onwards, systems thinking has been further refined and different - hierarchical - aggregation levels have been specified - i.e. the autonomous individuals, groups, organisations, and societies. Also, the relationship with the environment has become (open systems) involved. First-order cybernetics became a major supplier of designs and images (the organisation as a central heating system) for management discourse: 'This systems movement, particular in the form of cybernetics, has come to form the foundation of today's dominant management discourse, so importing the engineer's notion of control into understanding human activity (…). The manager is the objective observer standing outside the system and through reason designs it, changes

it and sets objectives for it' (ibid.: 58-62). If you observe administrative systems within an organisation (Finance, Human Resource Management, Manufacture, Marketing, Strategy), it is striking that until the present day, these functions are drenched in a systems language, models, and concepts. The central management concept is to control the system by negative feedback and thus keep it in balance. Negative feedback (control) is designed to remove from the system any difference compared to the norm. Supposedly it is in this way that the system evolves in a regular, orderly, and predictable manner. In short, through linear cause-effect cycles of the "if … then" kind (ibid.). In the words of Stacey & Mowles: 'This is Ashby's law of requisite variety: the complexity and speed of the firm's response must match the complexity and speed of change of the environment' (ibid.: 72.)

There is no place in this management concept for emergence; it is as if, through strategic management, adequate knowledge of environmental variables is guaranteed. Cybernetics is applied to human systems, without questioning the basic assumptions of the different aggregation levels (central heating system; human system). One also finds this in medicine where the heart is perceived as a complicated cybernetic pump and the brain as a supercomputer. Central to this theory of (first-order) cybernetics is that there is a regulator (management), which keeps the system in order (balance), and that the strategic choices, formulated rules and models, determine the direction of the system through a cognitive, rational, linear process. The future is predictable and can be planned. This is the wheel which is kept going by the vicious circle of the dominant simplicity paradigm (Stacey 1996).

There are three problems here: the manager is not outside his design, but is part of it, and; there is no room for novelty/change and paradox. And, there is no room for difference (noise/disorder). In the case of change, there is noise and paradox. Alongside linear feedback (damping) there is also a non-linear feedback (disproportionate strengthening of an initial state, known as the butterfly effect), and delayed feedback, which emphasises large time intervals between cause and effect; a good example of this is climate change. I will get back to these issues in the next chapter.

Although subsequent first-order systems theories do incorporate dynamics and thus abandon the idea that systems must, at any price, be kept in a state of equilibrium and predictability, the key assumptions of systems are not really questioned. This also applies to influential management theories of the last thirty years, which draw on first-order systems theory. I will discuss these theories briefly.

In the 1980s, managing cultures (Peters & Waterman 1982) got a lot of attention. The central theme was that the manager controls by influencing the system of 'culture' and in this way, can establish a dominant integrated organisation. This was later supplemented by other authors with the differentiation perspective (tolerance of subcultures) and in the margins with the fragmentation perspective which acknowledges

the wicked nature of problems (Clegg et al. 2016). In the 1990s the focus was displaced towards Managing Knowledge and Learning (Senge 1990), linking change with learning (Clegg et al. 2016). An important assumption in these theories was that you can manage knowledge. Knowledge management assumes that the organisation itself can fully oversee its knowledge, can oversee the expected demands for knowledge, and can oversee the allocation of knowledge (Brohm 2005). In this perspective, knowledge is an instrument in managing the strategy of the organisation. These trends converge in focussing on Managing Innovation and Change (Clegg et al. 2016).

In all these management theories an instrumental (economic value; logistics; strategy) or a consensual (facilitation of exchanges via interventions) approach of first-order cybernetics, is central: 'Both the instrumental and the consensual approach would pose organization before knowing' and thus negating that organization is 'something that is emergent, producing and produced by a multiplicity of perspectives' (Brohm 2005: 93-95).

In this ebb and flow of ideas, mostly handed down by management gurus (Kantola 2014), new management recipes do talk about complexity, non-linearity of systems, non-equilibrium, and chaos, but generally, these are ultimately paper tigers that do not mean much. This has partly to do with the management Guru system itself: 'Looking at Gary Hamel shows just how a range of media are employed in the circulation and promotion of a management guru. Books, writings, speeches, media appearances, experience in corporate consulting and academic prestige are all employed to enhance the brand of the guru for circulation of ideas. Business schools, publishing houses, consulting companies and media package the latest ideas and push the guru around the world through a succession of bravura performances. The only thing one needs to do is make sure to keep this cycle spinning' (ibid.: 268, see also Clark and Greatbatch 2004: 415).

Besides 'either-or' thinking, which rejects paradox and ambiguity, there is also a tendency in the abovementioned management concepts to set up a 'both … and' reasoning, which wants to synthesise all differences at a higher aggregation level (Stacey & Mowles 2016). Both 'exploitation…and exploration' reign, via a combination that is of course precisely measured and decided by management: "This immediately exposes the dual causality typical of systems thinking. There is a transcendent system in which individuals become a part to transform and there is an autonomous leader standing outside this and deciding whether to operate at that level. This is clearly 'both…and' thinking that eliminates paradox. The 'both…and' nature of thinking is evident in the postulation of *both* a system with an actual intention/desire *and* autonomous individuals who create conditions for shifting the system" (ibid.: 115, 131).

In first-order cybernetics, the distinction between the system itself and the simplified representation of the system through a model is hardly made. This supposes that you can do with the system what you like – i.e. the system is an object that can be

manipulated; the observer is situated outside of the system and is not affected by the system.

In second-order cybernetics, the system displays agency and that influences the observer. Intervention (defining purpose and goals) in the system by the observer get answered; the system intervenes in return: context speaks back (Nowotny et al. 2001/2008). Cybernetics means that the system is not a dead thing, but a living one (Morin 1977/1992). Cybernetics encompasses not only the studying and manipulating of the properties of the system, but the frames and characteristics of the observer are also included. *In other words: the observer becomes part of the observation, and the observation becomes part of the observer*. This results in a higher-order learning process, which is characterised by reflexivity (Morin 1977/1992; Von Foerster 2003). The principle of objectivism (separation of object and subject) is thus carried to the grave:

> 'I present this principle here, in its most brutal form, to demonstrate its non-sensicality: If the properties of the observer (namely to observe and describe) are eliminated, there is nothing left: no observation, no description. However, there was a justification for adhering to this principle, and this justification was fear; fear that paradoxes would arise when the observers were allowed to enter the universe of their observations. And you know the threat of paradoxes. To steal their way into theory is like having the cloven-hoofed foot of the devil stuck in the door of orthodoxy. (…) I mentioned objectivity before, and I mention it here again as a popular device for avoiding responsibility' (Von Foerster 1991/2003: 289-293).

The second order systems notion of integration of the observer and observation, *in difference*, resonates with the three complexity principles of Morin that I mentioned in chapter 1 and will elaborate in the next chapter.

The dissemination and popularity of cybernetics in many fields of knowledge are strong. Since the 1990s we mostly find second-order cybernetics in Artificial Intelligence, Robotics and in the work of the Santa Fe School where computer simulated complexity is studied, under the flag of Complex Adaptive Systems (Heylighen 2001).

Emergent Multiplicity Denied

Let me give an assessment of the half-time score in this chapter. Systems theories (first-order) of organisation base themselves on the Aristotelian idea that all systems (including human and economic) tend to equilibrium in relation to their environment and that paradoxes should be eliminated (Byers 2011, Morin 1977/1992). It is the job of management to regulate the equilibrium. This operation is value-free and objective.

The subject – for instance, the manager - analyses in a rational manner the parts of the organisation from the outside, and controls the parts in such a way that they jointly produce the whole. Via control, both the interaction between parts of the organisation and its environment, is organised by means of a series of management tools (strategy, structure, culture, human resources, operations, knowledge, learning, innovation, change, sustainability, and ethics).

In the organisation theoretical literature, the key assumptions of first-order systems theories (the linear worldview of the paradigm of simplicity) are not abandoned. Thus ambiguity, interdependence, contradiction, and emergence are denied. A taken for granted way to handle contradictions and emergence is the dichotomy, represented by 'either … or' thinking. As a manager, one opts for the one or the other solution. Another way to deal with contradictions is the path of the dilemma. This translates into 'both … and' structures, in which two contradictory realities are seemingly linked, evoking a paradoxical situation: one is offered fewer services for which you pay more. Such a paradox results in hiding one branch of the paradox or in reframing the problem by concocting a "new" management recipe. A paradox can also be two opposing ideas. In that case, you cannot remove a branch of the paradox (Stacey & Mowles 2016: 38-39). I agree with the view of the paradoxical nature of social reality which Stacey & Mowles suggest: 'The word paradox means the presence together, at the same time, of self-contradictory, mutually constituting, essentially conflicting ideas, neither of which can be eliminated or resolved' (ibid.: 39; Morin 1977/1992). From now on, I will replace this description with the term *emergent multiplicity*.

'Travelling surprises'; or how managing based on first-order cybernetics denies emergent multiplicity.

Let me give an example of managing, based on the following account in which a supposedly 'tamed problem' reveals the difference between 'either … or', and 'both … and' rationality and emergent multiplicity.

> "Market forces in healthcare, market forces in education, market forces in the market. But what do these market forces mean? What happens when 'it' is left to the 'market'? This summer, my girlfriend and I experienced how bizarre the market works. No, not in healthcare or education, but in an environment where market forces are established for already more than a century - the car market. On our way to France, we heard a strange noise in our leased car (Audi). The first Audi garage knows what it is - a wheel bearing -but has no time to fix it. The second isn't a real Audi garage, the third doesn't help us because of a conflict with the importer, the fourth doesn't have the part, the fifth does, but also has no time to repair it. We call SOS International, who have a solution: they arrange a French rental car for us until a rental car from the Netherlands arrives. Our

> own car will be repaired in the Netherlands. When two weeks later our car is ready – the costs are 368 euros - at least 26 people from 14 different companies have been involved, with more than 2.000-euro extra costs for others. In chronological order involving: Audi Liege, Audi Volkswagen Beaujeu, Audi Macon, Audi Villefranche, Audi Lyon, Audi France, ING Car Lease, SOS International, Avis Macon, Hertz Macon, Europcar Macon, Carhelpdesk Broekmans, Car rental Broekmans and Sanato Zeist. Apparently, the car market works this way. And how does the market in healthcare or education operates?"
> Warner Boer, Doorn (2010).

A seemingly simple problem - a broken wheel bearing – is, by a myriad of companies, each acting according to their own objectified logic and system rationality, turned into collective folly. The labels, rules, and protocols of the actors produce a coherence which has little to do with the experienced coherence of the vacationers and the contexts in which they are situated. The logic of simplicity, where the generic supersedes the specific (context), prescribes decontextualised command and control decision making – i.e. the dominant labels of ascribed coherence pushes aside emergent coherence. And that leads to ignoring complexity principles, which offer space to noise, ambiguity, and a certain degree of disorder (context). The result is an increase in complicatedness, which denies emergence, partly because it resists it. While the vacationers want their problem to be solved, but the issue and their experiential coherence are irrelevant to the rules of the service providers. Subject (all participants) and object (broken wheel bearing) became neatly separated, or, put differently, have traded places. The broken wheel bearing as the object of action has been replaced by a myriad of new objects: time problems, conflicts with importers, arranging rental cars, transporting a car back to the Netherlands. In this story, the effects of the dominant management discourse for *all* participants is, in the end, absurd. A recurring theme here is that the rules, which operate under the ideology of efficiency, produce its opposite (Graeber 2015; Morin 2008). We witness in the story the 'social production of moral indifference' in which there is a big gap between intentions and action (Morin 2004; Morin 2008; Letiche 2008; Bauman 1989/2000).

This mediation of action - the phenomenon of one's actions being performed for one by someone else, in this case, 26 persons representing 14 organisations, is one of the most salient and seminal features of modern society (Bauman1989/2000: 24-25, see also Letiche 2008). Morin summarises this phenomenon as follows: 'The action enters into the universe of interactions and in the end, it is the environment that seizes it in that sense that it can become the opposite of the initial intention' (Morin 2008: 55). Morin has named this immediate contextualisation of intentions that are acted upon: 'ecology of action'. This boomerang effect underpins his recursive causality principle, which will be elaborated in the next chapter.

In the traveling story, palpable human interaction is still present, albeit the human context has become frozen. I experienced, in a different situation, that the possibility of any human interaction was absent. Both I (the client) as my banker could not (no longer) intervene, even retroactively, after a computer algorithm had established that a rule was violated, an exceeding of a bank overdraft on a credit account of a few cents, which was caused by another computer algorithm of the Bank (Helbing & Pournaras 2015). The disproportionate result of this situation was that the entire line of credit was terminated, and payback was claimed, at very short notice, by yet another computer algorithm. On 17 August 2017, I received an intriguing mail send by the algorithms of the social medium site LinkedIn: 'Do you know Albert Cath? You and Albert have 1 mutual connection in common'. I just must push the button to connect. Does Albert Cath know Albert Cath? From a philosophical point of view: of course not. But both Albert Cath's are still wondering, who the mysterious mutual connection is they have in common. The algorithms remain silent when asked. This resonates with the heteronyms of Fernando Pessoa: 'a pseudonym is another name for the same I, the heteronym is an own name for another I' (Willemsen 1978: 221).

Organisation theory that is largely rooted in first-order systems theory and managing based thereupon, can only think in simple contexts of dichotomy (dualism of either…or) and/or dilemmas (both…and). This two-fold logic has developed into the combining of two dichotomies as shown in the 2x2 Matrix (see below). This means that context is not emergent but pre-given. The emergent context shows paradox and ambiguity, but this can be removed via an 'either … or' or a 'both … and' algorithm. The above mentioned unassuming Bank example does not stand alone. At 2.45 p.m., on May 6th, 2010, the stock market evaporated for a few minutes in New York. The so-called 'flash crash', in which the trading in shares took place in mini seconds without human intervention. After many studies, it is still unclear what happened, and it is impossible to verify, there are no traces to track in a microsecond world and that makes all parties anxious: 'Along with the trading algorithms, the routers were a critical piece of technology in the automated stock markets. Both are designed and built by people who work for the Wall Street broker. Both do the thinking that people used to do, but the intellectual tasks they (routers) perform are different' (Lewis 2014/2015: 75-80).

At a frantic pace, devices (refrigerators, electric toothbrushes, coffee machines, smartphones, etcetera) are connected to each other via sensors. This is also known as the Internet of Things. The (human) regulator from the first-order cybernetics is replaced by automated filters: 'Many choices that people consider their own are already determined by algorithms. Such remote control weakens responsible, self-determined decision-making and thus society too' (Helbing & Pournaras: 2015).

Both the client and the service provider cannot (no longer) intervene when the computer algorithm has determined the way things should proceed – i.e. contextualisation is eliminated.

Thinking the 2x2 Matrix

In the remainder of this chapter, I will elaborate on the consequences of the Simplicity Paradigm for organisation and/or organising. I will further deepen my critique of the dominant management discourse by analysing a central concept, based on the systems theoretical approach: the 2x2 Matrix. This approach seeks to capture social complexity in a four worlds approach, which on the one hand rejects the 'One best way' assumption of Scientific Management; but on the other hand, sustains the simplicity of cybernetic first-order systems theory, by positing two opposing coordinate axes in which two dualities are presented, to construct a neatly arranged fourfold lay-out.

The 2x2 Matrix takes it for granted that the paradoxical complex nature of organising and/or organisation can be caught in an 'either … or' or a 'both … and' logic, both of which assume that complex issues can be 'resolved' by catching them in dualistic concepts. The 2x2 Matrix assumes, on the one hand, that four possible worlds could present themselves, each of which requires a different management approach; but on the other hand, that the underlying first-order cybernetics principles remain unaffected in *all* these worlds. Thus, it assumes that *paradoxes can be removed by predicting emergence and then managing it.*

The ultimate instrumentalisation of the dominant management discourse can be found in the 2x2 Matrix, which litters most pages of mainstream management textbooks, assessment reports, strategy documents, organisational literature, academic papers, and policy documents. The Situational Leadership Model (Hersey et al. 1996, quoted in Clegg et al. 2016: 131) is a perfect example of the 2x2 Matrix thinking that prevails in Management Studies (see figure 12). In this case, two 2x2 Matrixes are confronted and integrated.

Situational Leaderschip Model
(Hersey et al. 1996)

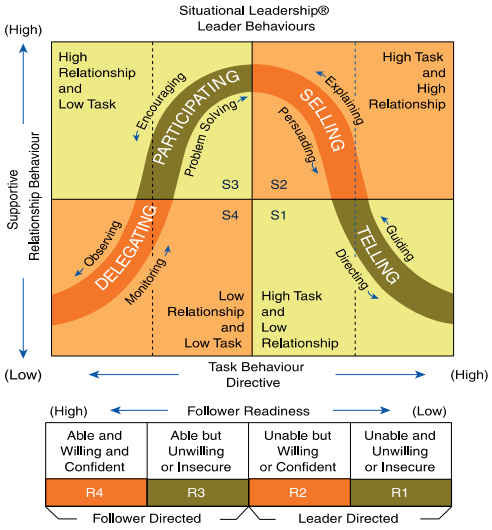


Figure 12

I will briefly describe the Situational Leadership Model: on the x-axis of the first matrix (Leader Behaviours) 'Task Behaviour' is plotted (high and low). The way to measure task behaviour is based on the degree of task directiveness. On the y-axis 'Relationship Behaviour' is plotted (high and low). The way this is measured is based on supportiveness. A 'Telling Leadership' style is defined as someone (leader/manager) whose style is described as high on directing and low on supporting. The second matrix describes 'Follower Readiness'. On the x-axis 'Competences' are plotted (high and low) and on the y-axis 'Motivation' is plotted (high and low).

The model represents two opposites: concern for production and concern for people (Task and Relationship), thereby conceptualising four Leadership Style quadrants. These are matched with the four follower's profiles (based on the dichotomy between ability and willingness). The application of the two 2x2 Matrixes, in terms of leadership behaviour, is then almost mathematical: R1 needs to be addressed by the leader through S1, R2 by S2, and so on and so forth. In other words: unwilling and incompetent employees should be lead/managed with a directive leadership style.

There is a clear reference to Tayloristic management practice (routinisation and deskilling of work) and Theory X and Theory Y (motivation theory) perspectives, in this 2x2 Matrix (McGregor 1960). Theory X (hierarchy, command, and control) informs us that people are inherently lazy and egocentric. The vicious management circle is obvious: what you sow, so shall you reap.

The Situational Leadership Matrix, like so many other 2x2 matrixes, is based on reduction and objectifying rationalisation. The model has a prescriptive character, which is not explained (how do the four leadership styles match with the follower development levels); the assumptions on which it is based are hidden. It is not clear how competence is

combined with motivation and the theoretical basis of the model is unclear (Northouse 2016: 99-102).

In addition, I would like to raise two more issues about this 2x2 Matrix and other Management Matrixes. In the first place, these models are mostly loaded with quantitative modelled data originating from surveys and questionnaires. In the Situational Leadership model, the input originates from two different databases: the measurement of leadership roles and the measuring of employee competencies. The two models are to a large extent self-referencing. After all, one starts with the establishment of quadrants, outside of which nothing seems to exist. In addition, a large degree of uniformity (sameness) is assumed – i.e. within the quadrants no diversity is to be found. It also is assumed, that a leader/manager can smoothly change style according to the situation and that employees can be developed in any direction as context demands. The roles and behaviours evidently are manipulable. Emergence (in role and leadership style) is ruled out in advance. I invite the reader to consider the Human Resources Management chapters of mainstream management literature, and especially to study the section HRM-instruments.

Finally, I will give a brief example of the above-mentioned issues, while researching the water management case presented in chapter 7. Along with a fellow researcher, I entered a knowledge institute in the water sector, interviewing the head of the department of knowledge management. We researched the role tacit knowledge (experiential coherence) played in coping with complex issues in the Dutch water sector. Tacit knowledge was operationalised by us, as experiential, personal, and situated knowledge; and we expected a connection with craftsmanship. Our hypothesis was that craftsmanship creates better conditions to cope with complex issues. Tacit knowledge is personal knowledge, which is implicit, and therefore not measurable and easy to transfer (Polyani 1966/ 2009). But this may be an important reason for management theory and practice to largely ignore tacit knowledge.

The knowledge manager received us kindly and was interested in our research, since it paid attention to, also by her admittedly neglected, experiential knowledge. After some introductory politeness and our explanatory notes to our research, she asked the following question: 'Ah, you come for the E?' We were lost, and this would determine the further conversation. 'E?' After some misunderstandings, the following explanation became apparent: she was referring to the E of experience in the knowledge management formula of Weggeman. A little cloud filled with question marks hung over our heads, as in a cartoon. Then a brief explanation by the knowledge manager followed, in which some incomprehension about our ignorance could be heard. For her it was the self-evident truth: 'Knowledge is a function of information, experience, skill, and attitude': K=*f*(I.EVA) (Weggeman 2000/2008: 33-46). The formula was taken for

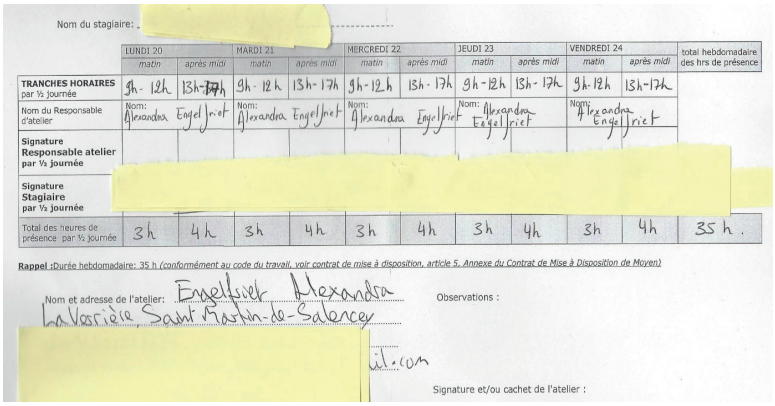
granted, self-explanatory, in other words, a vulgate. I think the confusion was more existential: The 'E', for us was related to **e**xperienced coherence and **e**mergence.

2x2 Matrix Reductionism in Practice

The 2x2 Matrix is omnipresent in the dominant management discourse. One cannot open any mainstream organisation theoretical treatise, advice-, strategy-, policy document, or any other document without noticing that the complex reality is reduced to a 2x2 Matrix (e.g. Clegg et al 2016, Northouse 2016, Meurs et al. 2006). What strikes me, is that rarely an explanation is given of the theoretical foundation of the constructed 2x2 Matrix. Let alone, what assumptions and contexts support the presented 2x2 Matrix – i.e. how does 2x2 Matrix thinking relate to lived, experienced practice? I will elaborate on an example, drawing on a recent experience I had. By adding context (complexity) to the story, as we saw in the Travelling Surprises story, the account will quickly lose its innocence.

A student, at a French ceramic art school, participated in a series of internships with artists to gain practical experience and to dialogue about the different perspectives on ceramic art, which were represented by the artists. During the five-day internship with Alexandra Engelfriet, an ongoing dialogue between the artist and the student took place about emergent events linked to working with clay. Talks about artistic experiences and the ongoing investigation of new art. A process that can best be characterised by emergent coherence. I could follow the process closely, and the five days had an erratic course, a very light structure, periods of extreme concentration, pain, and emotion, fun and laughter, in-depth reflection, humour, and confrontation with matter, self and other.

For the student, as she wrote later, it was a lot more than an internship, it was a deep existential and fundamental experience, which affected her as a person and as an artist. An example of Mode-3 knowledge production (see chapter 1). All of this was in stark contrast with the administrative process of the internship, in which the ascribed coherence of the intended internship is well reflected. A few days before the arrival of the student, the artist found a thick document in her mailbox. This consisted of three documents: a contract which regulated making available of resources in the studio to the student. A document that established the rules under which the internship should proceed, and an attendance list (see figure 13). The artist was to receive an allowance for expenses of € 135, =, which should cover both the materials used and the living expenses. In the perspective of the documents, the internship only takes place when the administration is in order.



Nom du stagiaire: [redacted]

	LUNDI 20		MARDI 21		MERCREDI 22		JEUDI 23		VENDREDI 24		total hebdomadaire des hrs de présence
	matin	après midi	matin	après midi	matin	après midi	matin	après midi	matin	après midi	
TRANCHES HORAIRES par ½ journée	9h - 12h	13h-17h	9h - 12 h	13h - 17h	9h - 12 h	13h - 17h	9h - 12h	13h - 17h	9h 12h	13h-17h	
Nom du Responsable d'atelier	Nom: Alexandra Engelfriet		Nom: Alexandra Engelfriet		Nom: Alexandra Engelfriet		Nom: Alexandra Engelfriet		Nom: Alexandra Engelfriet		
Signature Responsable atelier par ½ journée											
Signature Stagiaire par ½ journée	[redacted]										
Total des heures de présence par ½ journée	3h	4h	3h	4h	3h	4h	3h	4h	3h	4h	35 h.

Rappel :Durée hebdomadaire: 35 h *(conformément au code du travail, voir contrat de mise à disposition, article 5, Annexe du Contrat de Mise à Disposition de Moyen)*

Nom et adresse de l'atelier: Engelfriet Alexandra La Verrière Saint Martin-de-Salencey

Observations :

[redacted].com

Signature et/ou cachet de l'atelier :

Figure 13

Let me explain the figure above. On the x-axis, one can see the morning and afternoon periods. And the signature box of the person who is responsible for the atelier. Countersigned by the intern. All neatly following well established "office hours", including a lunch period of one hour. This mirrors the five-day French workweek of 35 hours, in conformity with the labour legislation, article 5, on the y-axis.

This simple 2x2 Matrix, illustrates the formal representation of the internship. The list is based on the French labour legislation, which counts more than 3.000 pages that specify labour relations in detail. Among other things, it stipulates that a working week consists of 35 hours, that studio hour should consist of a minimum of 6 hours and a maximum of 8 hours a day, and that the lunch break should last at least 30 minutes. In addition, there is a fixed layout for the morning and the afternoon. There is minimal space in the form for Observations of the artist. The other documents consisted of many items referring to all kinds of internal protocols, so that the internship can proceed with a clear universal pattern and format, regardless of the content and intent of the internship, which varies greatly with each artist. The internship included intensive discussions, which exceeded the prescribed 35 hours considerably. Afterwards, the art school asked the student to provide a detailed report on the course of affairs.

The art school, in turn, had to be accountable to its sponsors, which consist of seven public entities, each with its own requirements and regulations. The student is wedged between three different forces. On the one hand, the student is caught between a motivated or not teacher and the working conditions during the internship and the demands of the art school. And on the other hand, the field of influence of the sponsors also plays out in the background.

This story evokes a tension between decontextualised knowledge production (forms) and normative, ethical knowledge production: i.e. the student's experience of the internship (Clegg et al. 2016: 355-356). Here an issue arises between a reductionist, universal view on teaching practice and a specific view on relational, experiential teaching practice: 'Cartesian causality has never bequeathed the world an adequate perspective on the working of social, psychological, and educational systems. Because of their complexity and their idiosyncratic interacting parts, such systems do not lend themselves to reductionist explanation. In complexity theory, it is posited that no part controls the behaviour of the system as a whole and that relationship between the parts produces systematic qualities that are difficult to anticipate' (Kincheloe & Berry 2004: 36; see also Morin 1977/1992).

Two realities about the internship emerge: an administrative reality imposed by the rules, trapped in a 2x2 Matrix, and the experienced, emergent reality of the internship itself. A comparison with the 'Travelling Surprises' story imposes itself. Along the way of the internship, a stark contrast occurs between what Letiche & Lissack (2011) call ascribed coherence and emergent coherence.

Ascribed coherence is the world of the dominant management discourse as described in this chapter, with its labels, models, pre-established categories, checklists, protocols, auditing and the 2x2 Matrix. These instruments determine the sense-making process. Experienced or emergent coherence refers to: 'the sense-making occurs as an ongoing process of dialogue between observer and situation. (…) The unknown, the unexpected, and the new can challenge the capabilities of ascribed coherence' (Letiche et al. 2011: 12). It is the difference and the clash between systematic events, i.e. linear processes with clearly marked phases, and a context-free checklist approach with the aim of promoting efficiency, and emergent events that have a non-linear evolution characterised by uncertainty, disorder, and ambiguity, as we have seen in the Tranchée story. Both coherentist approaches exist next to each other: 'Managers and organisations not only need both approaches; they also need to be aware of the consequences that could occur when one approach is either overutilized or underutilized in favor of the other' (ibid.: 15).

The ascribed coherence of the internship and the emergent coherence of the internship form a simulacrum, especially for the student. She lives in both states of coherence, and they can trap her. For the artist, this simulacrum only becomes meaningful if the art school would start to carry out checks on the internship. For the art school, the simulacrum will only begin to put on pressure when checks on their activities would be carried out by the sponsors, or other supervisory bodies. A simulacrum is a moment when fiction and reality become indistinguishable when fiction can even take the place of experiential reality. In this case, the fiction of the form and the underlying protocols, rules, and regulations, which ignore the experience of the internship and even seem

to replace it (Slager 2012: 23). The image, the label, or the model that we put onto experienced reality, pushes the experience violently into the background. We then talk of Simulacra (Baudrillard 1994/2006).

A well-known label in organisational theory and practice is 'efficiency'. Efficiency has become so self-evident that it seems it needs not to be problematised. This is the black-boxing process that can be called 'immersion', a concept that comes close to simulacra. Both show a lack of reflexivity in relation to formula, protocols and computer models: '… epistemic opacity can be seen as a characteristic of black-boxed technologies, in this case, simulations and models: the latter's underlying complexity and everyday functioning according to expectations reduces the likelihood that social actors can or will question the simulations and models at their disposal, which can lead to immersion' (Kouw 2012:64). The worldview of simplicity, which denies uncertainty, indeterminacy, ambiguity, and paradox, in short, the fundamental complexities of the everyday, needs to be deconstructed here. The not problematised simulacra of efficiency, arising out of the dominant management discourse and the worldview of managerialism, leads to a great vulnerability of systems and actors (Slager 2012; Letiche 2008). A vulnerability that is further magnified as reflexivity disappears, or is prohibited and emergence is considered as a surface phenomenon. Epistemic opacity can be the gate of immersion: 'a situation where it becomes impossible to see reality apart from the simulation models. Worse still, the reality, according to some, becomes inaccessible to those who use simulation models' (Kouw 2012: 242; Cath in Jansen & Letiche 2017: 101, 109).

Ubiquitous 2x2 Matrix managerialism has nested itself in all the capillaries of society, as the above case of the art student shows. Managerialism was in the recent past mainly restricted to the private sector but has recently also entered the (semi) public sector under the banner of New Public Management. A study in terminal healthcare shows that the primary objective, the attention for the terminal patient in relation to the everyday needs of the patient at the bedside, has been shifted by the organisation away from the organising of care for terminal patients. The management discourse (policies, procedures, funding) has taken over from the care discourse (Slager 2012).

This leads to the question whether an organisation - in this case in the non-profit sector – hasn't forgotten what it was founded for and whether the maintenance of the organisation hasn't become more important than care (ibid.; Letiche 2008). The original, care discourse, has been replaced by a copy, management discourse. This shows a paradox that affects the taken-for-granted key assumptions of both discourses. The gap touches on a deeper clash of different logics: 'The bureaucratic, corporate logic has gradually become diametrically opposed to the professional logic. Substantive expertise and experiential knowledge have been marginalised' (Tjeenk Willink 2006: 21-41). In this logic, craftsmanship is reduced to 'total bureaucratization' – i.e. 'this process - of gradual fusion of public and private power into a single entity, rife with rules and regula-

tions whose ultimate purpose is to extract wealth in the form of profits' (Graeber 2015: 17-18).[31] Managerialism is not only a search for 'the one best way' to organise a private or public service but is also supported by a logic that is not problematised or questioned. Put differently: to speak of a complex society is paradoxical when complexity principles are denied, or when the principles are formulated in the reductionist language of mainstream management and its instrumentalisation: the 2x2 Matrix.

Concluding Remarks

The Situational Leadership Model (SLM) put into a 2x2 Matrix, prescribes four roles which the leader/manager should play, depending on the quadrant that applies. This presupposes that the leader/manager can continuously vary and play different roles and that the correct quadrant can be identified. This adds a double uncertainty: in SLM practice the manager, situationally, must be able to be directive one moment, delegating another, and participating yet another. In addition, there still is a boundary problem in the relationship of the quadrant to the role: the S1 quadrant is the opposite of the S3 quadrant in the SLM-model. It is extremely counterproductive to act directive when participative management is required, and; an issue can migrate to another quadrant (contextualisation).

The 2X2 Matrix shows that in the dominant management discourse, it is tacitly assumed that management is intentional so that emergence can be prevented: 'the two modes of thinking (intentional/deliberate and emergent) contradict each other, and this means that we cannot say that mode one works in some situations, while mode two is more appropriate in other situations – this attempt to have your cake and eat it simply blocks the radically different nature of mode two thinking' (Stacey & Mowles 2016: 18-19).

In the 2x2 Matrix, double uncertainty is introduced: is sufficient knowledge and sufficient certainty present for an action perspective? In the 2X2 Matrix, issues from two different discourses are combined: on the one hand, consensus over relevant knowledge (cognitive model) is an issue; and on the other hand, agreement on relevant norms and values (normative model) is postulated. On the one hand, therefore, the 2x2 Matrix entails an epistemological debate (knowledge and action perspective) and on the other hand, a normative, ethical, and social debate (the values). This 2X2 Matrix shows the oversimplification of the mainstream management discourse through a lack of complexity principles. On the one hand, any self-respecting contemporary management

[31] See also: David Graeber – American Anarchist on Bullshit Jobs: https://londonrealacademy.com; published on 8 November 2005.

theory pays lip service to complexity; but on the other, a simple solution direction is proposed: sweep the problem as fast as possible into one of the four quadrants. After this domestication of the issue, management can then solve the problem with the textbook management tools at its disposal. In other words, the 2X2 Matrix reduces emergence (uncertainty, ambiguity, disorder) to simplicity. And so, emergence (complexity) in a roundabout way, still ends up as a quest for certainty (order and predictability).

Morin puts this paradox as follows: 'Cybernetics, like all theory, developed along two opposite sides each leading to a valley unknown to the other, though they both bear the same name. The first side is that of a new look, a new dimension, which bring new complexities to everything; the second is that of the replacement of the amplification by another, under the rule of a master formula which resolves all problems (…) In these conditions, the paradigmatic, technocratic, sociological weights carried most of the cybernetics along the side of simplification, reduction and manipulation' (Morin 1977/1992: 250).

As previously stated, a 'tamed problem' can be interpreted as a problem about which there is sufficient, provisional, knowledge; and an agreement among the various stakeholders on the solution directions. A 'wicked' problem shows, on the contrary, great knowledge uncertainty and uncertainty about how to act.

The problem I pose is whether the distinction between tamed/structured and untamed/unstructured problems and everything in between, is tenable in the context of thinking Complexity.

At this point, I would like to problematise the distinction between a wicked and a tamed problem. The 2x2 Matrix reduces the complex reality to an axial cross in which two dichotomies divide the world into four possible worlds. The 2x2 Matrix raises several questions and paradoxes, which are important regarding the question of how to cope with complex issues in practice. I have shown this, based on The Situational Leadership Model Matrix (SLM) by Hersey et al. (1996), which I took as an example to problematise the dominant management discourse.

The 2X2 Matrix prescribes four roles, which the manager should assume depending on the quadrant that plays up. This presupposes that the manager can do this and that the correct quadrant has been identified. In addition to the observed epistemic problem (paradigm of simplicity versus paradigm of complexity) - i.e. how does one investigate a structured problem and how does one investigate an unstructured problem; there is also the issue of who determines whether one of the four types of problems are at play (Kunseler 2016; Kunseler 2017). The set-up of the 2X2 Matrix shows that the determination of the quadrant and the corresponding role of the manager may stem from a dialogue between management and numerous other stakeholders. In that case, the SLM Matrix or any other 2X2 Matrix may have the intention of serving as an object for dialogical reflexivity. And that is laudable. In other words: 'Iterative dialogue produces a form of

simulacra. By conversing among the quadrants and their interrelations, one can make predictions, reflect on an altered situation or context, look for additional affordances, and thus try to reshape the adjacent possibles. Rules, labels, and categories do not have "room" for such explorative dialogues. When best practices are applied, far too often they are treated as rules and categories, rather than as the situated simulacra that they really are' (Letiche et al. 2011: 249). However, the practices which I examined, based on 2x2 matrix discourse, point in the opposite direction of reflexivity – i.e. the 2X2 Matrixes in the dominant management discourse have the objective to serve, at best, as a checklist for the manager, precisely to avoid dialogues, if only because otherwise action would become too complicated and time-consuming.

An important question emerges from the above: is it tenable to distinguish between wicked and tamed problems? Is the distinction not, after all, dependent on the degree of contextualisation of the issues under study? Does one choose for a weak contextualisation, a middle range contextualisation, or a strong contextualised perspective (Nowotny et al. 2001/2008)? In the thinking of the simplicity paradigm, contextualisation is largely avoided. Issues are reduced to a 2X2 axial cross, in which the confrontation of two dichotomies via an 'either-or' dichotomy or a 'both…and' dilemma defines the quadrants. An appropriate, prescribed recipe is applied, and that determines the action. In a view founded on complexity, where strong contextualisation is paramount, this is untenable.

The instrumental approach of the 2X2 Matrix and action based thereon, in practice regularly turns out to have the opposite effect from what was intended. In a crèche in Israel, the director of the institution introduced a fine of ten dollars by the hour to parents who came late to pick up their children after school. The effect of this measure was that three times as many parents came too late! Before the fine was installed, most parents tried to be on time from a moral sense that one doesn't want to embarrass the children and their teachers. This value immediately shifted to an economic value: ten dollars by the hour was, after all, cheaper than a babysitter. The financial reward did not add anything to the moral reward (picking up your child on time), but on the contrary dispelled the value (Cohen 2012: 50-51).

It appears that the 2x2 Matrix defines a dog that bites its own tail, repeatedly. The endlessly revolving vicious circle of the dominant management discourse, in its denial of ambiguity (paradox) and emergence, in a quest for certainty and its top-down solutions for 'wicked' problems, cannot break out of its vicious circle. 'Thinking Simplicity' can be summarised as follows: 'We continue to claim publicly that we are applying theories and using the tools and techniques to manage our organisations strategically in order to realise centrally chosen global states on the basis of science, while in fact we are simply acting on the basis of historically acceptable beliefs about management which have come to serve particular interests, if indeed we are not actually doing something completely

different to what we claim publicly. The fact is that organisation and management sciences are not sciences at all but scientific emperors with no clothing' (Stacey and Mowles 2016: 20).

So, let's close this chapter and turn the page to find some solace in other assumptions, concepts, and worldviews, which have germinated in recent decades under the auspices of the paradigm of Complexity. I will try to further pry open the black box of systems theory and the dominant management discourse. And with that, I will invite a new guest to the table: disorder. A guest who was always prominently present, but who was not seen by the 'blind intelligence' of simplicity: 'the obsession with simplicity has led to the scientific adventure of discoveries impossible to conceive of in terms of simplicity. In addition, in the nineteenth century, there was a major event: the eruption of disorder in the physical universe. (…) So, the dichotomy was no longer possible. It took these last decades for us to realize that disorder and order, although enemies, cooperate in a certain way, to organize the universe' (Morin 2008: 40).

In other words, complex practice, characterised by uncertainty and emergent multiplicity, calls for complexity concepts to cope with it. In the words of Popolo: 'This is akin to Nietzsche's attempt to overcome metaphysics without falling into the despair that must necessarily follow the death of God; pessimism and nihilism must be overcome with the creation of art and culture understood as modes of knowledge that accept the tragic reality of this world: uncertainty' (Popolo 2007:226.)

In the next chapter complexity principles and concepts and related epistemology are put forward.

Chapter 5

Thinking Complexity

Complexity asserts itself first of all as an impossibility to simplify; it arises where complex unity produces its emergences, where distinctions and clarities in identities and causalities are lost, where disorder and uncertainty disturb phenomena, where the subject/observer surprises his own face in the object of his observation, where antinomies make the course of the reasoning go astray. (…) Complexity emerges, we have said, as a darkening, as a disorder, as an uncertainty, as an antinomy. This is to say that the very thing which provoked the ruin of classical physics construct the complexity of the new physics. *This is to say, for the same reason, that disorder, darkening, uncertainty, antinomy impregnate a new type of comprehension and explanation, that of complex thought.*

Edgar Morin (1977/1992: 386-387).

The Fundamental Ambiguity. Fundamentally there is an ambiguity, one face of which says that there is an ambiguity while the other says that there is no ambiguity, but this face is not unambiguous.

Albert Low 2002: 259-260, quoted in Byers 2011: 164.

'People think that complex is an advanced state of complicated,' said Zoran. 'It's not. A car key is simple. A car is complicated. A car in traffic is complex'.

Michael Lewis 2014/2015: 198.

"We are the ones who will hear," said Phouchg, "the answer to the great question of Life…!" "The Universe…!" said Loonquawl. "And Everything …!" (…) "All right," said the computer, and settled into silence again. (…) "All right," said Deep Thought. "The answer to the Great Question…" (…) "Of Life, the Universe and Everything…" said Deep Thought. (…) Is … "Forty-two," said Deep Thought, with infinite majesty and calm.

Douglas Adams 1986/2005: 119-120.

Keep it Complex

In chapter 4 (simplicity) we took the staircase towards the first floor, leaving the one-dimensional mechanistic worldview of the one best way, that supports at most complicatedness and denies complexity, behind us. Now we climb the next staircase towards the second floor, where we encounter nonlinear deterministic systems theory based on self-organisation and chaos theory, ending up on the third floor with the multi-dimensional trilemmas proposed by Edgar Morin, converging on his three complexity principles. Emergence is not denied anymore, on the contrary, it is leading.

Thus, in this chapter, we leave the raked lowlands of simplicity and simplification to enter the wuthering heights of complexity. The paradigm of simplicity, incidentally, isn't an exact mirror image of complexity – i.e. complexity cannot be reduced to simplicities. The difference with complexity is in the mutilating character of simplicity and simplification (Morin 2008: 57; Morin 2004). Another difference is that 'Complexity is a problem word and not a solution word' (Morin 1990/2005: 10). Complexity does not wash away simplicity, complexity refuses the reductionist, separating, unidimensional, blinding character of simplicity. Complexity denies simple thought as a representation of the real. Complexity should also not be confused with completeness (totality) (ibid.: 11). Stated more precisely, complexity concerns complex thought: 'now complex thought is in fact that which tries to respond to the challenge of complexity, not that which observes an inability to respond' (Morin 2006: 140). It is an action perspective that wants to liberate the simple thought from its disjunctive, reductive, objectivist, linear, trivial realism. It is an attempt to (re-)connect the laboratory experiment to the real and vice versa.

As this chapter progresses I will try to reveal, as far as possible, what thinking complexity means. My assumption and that of other thinkers is that the Mode-1 ideal of science is inadequate to investigate and describe the complex, messy, human reality (Morin 1973/1979; Letiche & Lightfoot 2014; Nowotny et al. 2001; Agar 2013). However, it is also pointless to resign to the situation – i.e. to admit defeat with the observation that it is not possible to *investigate* complex reality. To begin with, the 17th-century scientific revolution has been a paradoxical liberation from the chains of totalitarian authority, of the absolute monarch and the bishop. Paradoxically, as we shall see, this liberation has, in turn, resulted in a new prison: The Mode-1 science church (Morin 1990).

The historian Floris Cohen places the precarious passage from the Old World to the New World, from the premodern Aristotelian worldview to modernity, in the era of Enlightenment. This process of modernisation becomes visible in the reading of Cohen, at the end of the 18th-century. The scientification of the world view, especially in the West, has brought us, many "thinking and doing breakthroughs", and unprecedented prosperity, which is almost taken for granted. That these breakthroughs were a hazard-

ous adventure also needs to be clear: 'The enduring existence of the new knowledge of nature went against all historical experience' (Cohen 2007: 264). This is partly due to socioeconomic (investing entrepreneurs), knowledge (universities) and political-institutional contexts. Cohen considers the scientific revolution from the natural scientific perspective, and there is much to be said for this, given the long history going back to the Greeks (Athens and Alexandria), China and the Arab world (ibid.: 11). A perspective that in the human sciences has led to imitation (Agar 2013, Morin 1990).

In the natural sciences, the quantitative, reductionist worldview, with its quest for universal laws of nature, proved to be successful both in theory and practice. We have evolved from the mechanical clockwork universe of Newton, through the ominous entropic, always being in decline, universe of Clausius, to the Darwinist, creative universe (Morin 1977/1992; Morin 2008). Complexifying the perspective on the world and knowledge about the world continues to this day and calls for a 'scienza nuova', which embraces complex thought (Morin 1973/1979, 2008, 2004; 1977/1992).

This chapter is largely based on the work of Edgar Morin. In several publications, he looks back on the genesis of his monumental six-volume study of complexity (La Méthode/Method), which took over twenty-five years, and includes approximately 2.500 pages. In Method, he describes how the pillars of his concept of complexity matured and came to fruition. He writes of his own intellectual coming into being and to think complexity, in which he stresses the importance of (human) history. The ideas of contingency, disorder, and uncertainty in relation to order are in the foreground: 'Everyone should think about their own history and pre-history. When I think of mine, I see that I am the fruit of a very unlikely encounter between my parents. I see that I am the product of a spermatozoid survivor out of 180 million, which, by who knows what fortune or misfortune, has entered my mother's egg. I learned that I was the victim of abortive manoeuvres, which had succeeded on my predecessor, but no one will know why I escaped the bidet. I was stillborn, revived only by the vigorous slaps of a doctor, just as he was about to give up his efforts. The death of my mother, when I was nine years old, was a random event which has deeply transformed and shaped me' (Morin 2015; Morin 2008).

It is through his university tutor Georges Lefebvre that Morin arrived at two key ideas for his Magnus Opus, Method. The first is that decisions and actions often do not lead to the results one expects, they can even lead to their opposite (ecology of action). The second is that the historian who studies the past must be considered in the context of his own time (historicising) because he unconsciously projects the problems and experiences of his own time on his object of study. Integration of the observer in the observation is necessary (ibid.: 9-16). Another important source and precursor of Method was Morin's ethnographical, anthropological, and sociological work. In this work, he broke open the straitjacket of Mode-1 production of knowledge. Morin ultimately

began, based on his participatory sociological research, to theorise about practice. In the introductory chapter, I referred to his studies of practice (e.g. Plozévets studies, Rumour in Orleans, and California Journal).

Morin revealed in his practical research and theory about it, to be averse to the increasing fragmentation and separation of the various disciplines of knowledge. His central theme is to connect the disciplines in their difference. His work and associated life can be understood as a call for transdisciplinary research, to which a multidimensional research methodology and hermeneutics is fitting. I will dwell on this briefly because it is impossible to separate the intellectual researcher Morin from the human being Morin: 'he has never stopped thinking his life and living his thought' (Truong 2010: 7; Lemieux 2009). He refuses to live in the split of the 'objectivist' researcher, whoes thinking, outside of the laboratory or study, may be very different from insider thinking – i.e. 'the ideas for Morin's concepts of complexity were sowed in his participative action research that preceded Method' (Montuori 1970/2008: xiv).

In his anthropological fieldwork, Morin already showed a distaste for polarisation – i.e. ossified dualism of 'either…or' separation of the scholar and the human being; the object and the subject, and 'the arrogance' of monodisciplinary fragmentation in the production of knowledge. In his work, he states repeatedly that the science/life split is incompatible with thinking complexity. Thinking complexity can be understood as an ongoing process of the (re-)contextualisation of events: 'In any case, in the crisis of the foundations and before the challenge of the complexity of the real, all knowledge today needs to reflect, recognise, situate, problematise itself. The legitimate need of every knowing person, henceforth, wherever he may be, should be no knowledge without knowledge of knowledge' (Morin 1986: 25).

Before elaborating on some important main concepts and principles of complexity, I want to dwell on the concept of 'self-organisation'. This complexity concept is a crucial joist supporting the second floor of Morin's Complexity Edifice. On the one hand, self-organisation is an important concept in all the theories of complexity known to me, on the other hand, self-organisation has become an important new concept in organisation theory, which stems largely from unproblematised translations of natural scientific (nonlinear deterministic) concepts of complexity theory into the social sciences. I will problematise the self-organisation concept, based on several issues which could be raised in the context of social complexity, and its rather loose use in mainstream organisation theory. Subsequently, I will present several key complexity principles of Morin, and finally, my preliminary conclusions will be distilled from this.

Self-Organisation

Anticipating further elaboration of concepts of social complexity and their significance for organisation studies, I will discuss the concept of self-organisation. I dwell on it because self-organisation constituted the starting point for my change in thinking about social complexity from 2005 onwards. Most theorists of organisation associate self-organisation with (social) complexity, and consider it as an important pillar for the complexity theory of organisation and/or organising. This includes the concept of emergence, which I will elaborate in the next chapter. The question is whether the complexity principle of emergence covers the same ground as the complexity concept of self-organisation. In fact, are they synonymic? It began to dawn on me that a few important question marks are appropriate here.

The concept of self-organisation has taken off in the natural sciences in recent decades and several authors have translated these concepts into management thinking. In many publications (management books, articles, policy papers, theses) this concept forms the focal point (e.g. Stacey et al. 2016; Clegg et al. 2016; Nol Groot 2010; Rob Zuijderhoudt 2007; Thijs Homan 2013). Also in my conversations with public servants, managers, entrepreneurs, and representatives of research institutes, the subject is frequently addressed, sometimes casually, often explicitly. Self-organisation has become an important part of the discourse in the field of management, especially when complex issues are concerned. I experienced that there are good reasons to give a warning about the loose use of the concept of self-organisation. Jacco van Uden expresses this warning as follows: "According to some authors, using concepts like 'self-organisation', 'nonlinearity 'or 'emergence' in the field of organisation is not without danger. In 1999 Bill McKelvey signalled that complexity science applied to management had all the earmarks of becoming a management consulting fad (McKelvey 1999)" (quoted in Van Uden 2007: 147).

That this warning for management consulting fads, should be taken seriously, could, for example, be concluded from the hype that followed the publication in 1982 of the book 'In Search of Excellence' by McKinsey consultants Peters and Waterman. Clegg et al. give an apt description of this hype: "The message was simple: great companies have excellent cultures. Excellent cultures deliver outstanding financial success. What makes culture excellent is shared core values and presuppositions that are acted on" (Clegg et al. 2016: 211). Despite major criticism of the study and other similar studies, the ideology that organisations should be managed from an espoused dominant culture, had a profound impact on organisations, which had hitherto placed the organisation structure in the forefront. Clegg et al. place appropriate question marks behind the one-sided favouring of an integrated culture in organising: 'Peters and Waterman have a nice story to tell. Integrate everyone into one managerially designed and approved culture of

excellence and superior performance will be the outcome. (…) However, as critics were not too unkind to point out, many of the so-called excellent companies had, in fact, become far less successful within 18 months of In Search of Excellence being published. The change in their circumstances did not slow the rollout of the rhetoric of excellence in management-speak, however. It proliferated rapidly. Soon, nearly every manager and wannabe manager could be heard talking about how important searching for excellence was, and many management consultants were only too happy to help design a culture to make this happen. Despite In Search of Excellence being a huge commercial success, it is, analytically, too one-dimensional, too focused on culture as just one aspect of organisation life, too focused on the stories of top managers, and thus serving somewhat as propaganda for the managerial elite and their views of the way culture should be. But millions read it' (ibid.: 213).

A similar course of events can be observed in the hypes that emerged in the 1990s around Knowledge Management, and subsequently around Innovation Management, and nowadays Managing Sustainability, Socially Responsible Investment, and Corporate Social Responsibility, partly under the influence of an endless series of corporate scandals, greenwashing, as well as an increasing public awareness about the threats climate change presents. Many issues now take shelter under the umbrella of business ethics. These hypes can often be characterised as old management ideas parading as new ones; but also, critical voices come forward, voicing the complexities and dark sides of such hypes of, for example, that of business ethics (Earhart 2011; Jones et al. 2005; Clegg et al. 2016). In his concluding remarks, Van Uden states that: 'a new concept may enable us to call into existence a phenomenon that was inexpressible in our pre-existing language, for instance. Alternatively, we may borrow a concept to undermine the foundation of a dominant theory we seek to destroy. Or we hope to find that the concept combines existing organisational themes in a way that was inconceivable in the absence of it' (Van Uden 2007: 156). I think that the following warning is relevant. Self-organisation is the new organisation and/or organising recipe, which enables coping with complex issues, at least as some management gurus present it, and it has its dark sides.

Only a few, mainly in the scientific arena, take the trouble to formulate a description or definition of the concept of self-organisation. What strikes me is that the concept of self-organisation is often seen as an alternative to the more mechanistic conceptualisations of organisation (theory). Self-organisation is presented as an escape from the desert of over-simplification and denial of most people's agency that Taylorism brought us; a system of theories of organisation with which we (manager, governor, politician, professionals, scholars, and consultants) have been spoon-fed, and by which we are programmed (Kanigel 1997). The promised land, then, is that self-organisation will help to find our way (out) in the experienced complexity of organisation and/or organising in relation to shifting complexities of society.

According to many, self-organisation promises an answer to a generally experienced feeling of powerlessness, alienation and bureaucratisation in organisation and/or organising. I will dwell briefly, on several descriptions and definitions, of the concept of self-organisation from different angles. Let me first point out that the presentation of these different perspectives has more the character of an exhibition than a tribunal. I don't describe them to then oppose them triumphantly and to subsequently glory in my own discoveries. These different concepts of self-organisation play an important role in the discourse of management studies, public administration and the science of complexity, and therefore should be taken seriously.

Deconstructing Self-Organisation

The first step in the deconstruction of the concept of self-organisation concerns its origin in the natural sciences. Ilya Prigogine and Isabelle Stengers (1984) state in relation to the concept of self-organisation in the natural scientific context, that self-organisation in nature occurs only under very specific conditions, which are characterised as an intermediate zone between order and chaos in a system. Self-organisation is situated between deterministic predictability (order) and far from unpredictable fluctuations (chaos). After the system has regained itself on a different aggregation level because of self-organisation, the system again obeys the laws of its new order, until the moment of new fluctuations emerges.

Self-organisation, conceived in this way, has a qualitative, situational character; self-organisation cannot be quantified. The authors point out that under specific circumstances, small fluctuations can have a disproportionate influence on the outcome, but that otherwise, deterministic laws govern the system.[32]

[32] In their own wording: 'We are tempted to go as far as to say that once the conditions for self-organisation are satisfied, life becomes as predictable as the Bénard instability or a falling stone. (…..) The early appearance of life is certainly an argument in favour of the idea that life is the result of spontaneous self-organisation that occurs whenever conditions for it permit. However, we must admit that we remain far from any quantitative theory. To return to our understanding of life and evolution, we are now in a better position to avoid the risks implied by any denunciation of reductionism. A system far from equilibrium may be described as organized not because it realizes a plan alien to elementary activities, or transcending them, but, on the contrary, because the amplification of a microscopic fluctuation occurring at the "right moment" resulted in favouring one reaction path over several other equally possible paths. Under certain circumstances, therefore, the role played by individual behaviour can be decisive. More generally, the "overall" behaviour cannot, in general, be taken as dominating in any way the elementary processes constituting it. Self-organisation processes in far-from-equilibrium conditions correspond to a delicate interplay between chance and necessity, between fluctuations and deterministic laws. We expect that near a bifurcation, fluctuations or random elements would play an important role, while between bifurcations the

The physicist Per Bak, also emphasises the qualitative aspect of self-organisation, in relation to complexity: 'The reductionist methods of physics – detailed predictions followed by comparison with reproducible experiments – are impossible in vast areas of scientific interest. (…) Experiments are irrelevant in evolution or palaeontology, because nothing is reproducible. History, including that of evolution, is just 'one damned thing after another'. We can explain in hindsight what has happened, but we cannot predict what will happen in the future' (Bak 1996: 7).

Self-organisation emphasises that small, individual actions, under certain conditions, strengthening positive feedback, can bring about large differences in outcome (disproportionality between cause and effect - i.e. non-linearity). Also, Bak confirms that a quantitative approach to self-organisation is unacceptable. He points to a narrative approach with a special focus on specific and (historical) reflection. Examples from the natural sciences are based on complex modelling.

In addition to nonlinear deterministic modelling of complexity, another sort of modelling is possible, which sails under the flag of Complex Adaptive Systems (CAS). Gell-Mann (1994), Holland (1998), Kaufmann (1993) and others have described CAS. Complex adaptive systems are for many authors the starting point to explain complex social organisation. In this approach, agency is considered, whereby the various agents in the population adapt themselves to others, whereby ever-changing nonlinear patterns form, which are not determined by general blueprint-like laws. A well-known example of this approach is the swarming of a flock of birds (see below). CAS are primarily studied at the level of individual agents, not on the level of the blueprint of the system.

The agents follow local principles of interaction. This bottom-up approach (local interactions as the starting point) is, in fact, the main difference with the deterministic approach, which principally analyses on systems level. Both approaches rely primarily on computer simulations. And here the veneer of the beautiful and inspiring construction in my eyes begins to peel off. Or stated differently: in this respect I am, since 2005, awakened from my sleep by several thinkers on complexity, who not so much doubt the non-linear, emergent nature of organisation and/or organising, on the contrary; but have removed their analysis from modelled systems theory.

One can question if the simulations can represent the real, - i.e. that computer simulations say more about computer programs than about reality itself. Letiche takes a clear position in this debate: 'The basic ideas of social complexity theory were launched in the 1980s in France by Ilya Prigogine, Michel Serres, and Edgar Morin. (…) This was a period of rapid modernization and intellectual creativity. The ideas were transplanted late in the twentieth century to the United States and especially the Santa Fe Institute.

deterministic aspects would become dominant. These are the questions we now need to investigate in more detail' (Prigogine & Stengers 1984: 176).

What began as a non-deterministic theory of emergence and dynamism became in Santa Fe a theory of artificial life or intelligence and of computer modelling. The human was taken out of the theory and determinism was added' (Letiche 2008: 232-233; Agar 2013; Kouw 2012; Kreps 2015). In my words: The study of organisation and/or organising is about people of flesh and blood and what they have to say about their life and death in organisations, about their situated practice and place in relation to the social complexity of that life. When I arrived at this conclusion, it marked a turning point in my thinking about social complexity in organisation and/or organising, and fundamentally changed my thinking and practice. In the following sections and chapters, these concepts of complexity will be further discussed and developed.

I now will briefly consider several attempts to translate nonlinear deterministic concepts of complexity to organisation and/or organising theory. These translations are inscribed in the dominant management discourse, which ultimately has difficulty to resist the temptation to translate the metaphors that are provided by the natural sciences, more or less unquestioned, into the social domain. As Basten asserts: 'In short: metaphor and ritual on the one hand reflect and reinforce images of man and world (selfreferentiality) and on the other hand construct images of man and world. They highlight certain aspects while hiding others. Further, they are both cultural and biological. Metaphor and ritual are inherently political because of their ordening and argumentative function in discourse or negotiation. As part of the experienced reality they pervade both private and public life and are active on both conscious and subliminal levels' (Basten 2000: 268-269). A temptation which, from the start of Scientific Management and Taylorism at the end of the 19th-century, has proved to be hard to resist. The question then is: how can we liberate Odysseus from the mast to which he is tied, to face the sirens of determinism, reductionism, and the disjunction of context?

Lost in Translation?

The translation of nonlinear deterministic concepts and theories of complexity from the natural sciences to the field of management studies gained momentum from the nineties of the last century. In this section, I will briefly mention some of these translations to give an impression. After his study published in 1995, in which several cases are viewed from the complex decision-making processes that characterise these cases, Geert Teisman introduced a theory of complexity of public administration. He occupies an intermediate position (between scepticism and fascination) with respect to the translatability of theories of complexity from the natural sciences into the organisation sciences. Eventually, fascination takes the lead, as the following quotation illustrates: 'Various authors try to translate insights from the natural sciences to social systems

(Arthur 1990, Stacey 1999). But there also is scepticism: "The past ten years have seen a growth of interest in the insights which 'management complexity' claims to provide for modern management. This author has felt uncomfortable that many of these insights are in fact little different from insights of previous writers, and that the lack of evidence for their applicability in natural sciences, let alone organisational situations, means that they have little-proven value beyond metaphors" (Murray 2003: 409). Teisman agrees with these critical objections but argues that translation of complexity insights from the natural sciences into organisational theory should nevertheless be taken serious:

> 'Transformations of natural scientific insights and methods to the social sciences have proved to be problematic in the past. Introna (in Mittleton-Kelly 2003) and Kickert (1991) call to mind how systems theory was embraced in the sixties. The high expectations haven't been redeemed. Several theories of complexity build upon concepts from systems theory such as self-organisation and emergence (the overriding importance of upcoming events for the development of systems). This feeds the scepticism. This, though, isn't sufficient reason to overlook useful insights from the theory of complexity. Even if natural systems operate according to natural laws, while social systems are full of people who want to lead/govern and who want to bend the system to their will, even then there are enough similarities which one can perceive in the operation of both systems. The most important is that of the complexity itself. A second is that of the dynamic relationship between order and chaos. A third is that of the interaction as a guiding principle in complex systems. A fourth is that of the acting subject' (Teisman 2005: 23-24).

Self-organisation is a concept, which is increasingly used in different contexts, without making clear what is meant by it, in what context it is used, and what significance it has in organisation theory and practice. It is a concept that gives rise to confusion. In the first place, it is often interpreted as self-management. This is the case, when senior management delegates its own responsibilities to the employees, and evaluates the activities of these employees with the 'face' of the market (Fournier & Munro 2004).

In the second place, most adaptive theories of complexity that are known to me, are based on the translation to organisation and/or organising of natural scientific concepts, as articulated by Prigogine, Bak, Goodwin, Kaufmann, and others. A disadvantage of this is, that these translations get stuck in metaphors and analogies. At a given moment these metaphors and analogies become commonplace and often are not questioned any longer by managers, policy makers, and their advisers. At this moment, the most widely held view apparently is that self-organisation is a 'grassroots' principle, which can be characterised by the absence of central control (lack of blueprint), whereby collective patterns emerge from interactions at a lower aggregation level (Van Wendel de Joode 2005, Stacey 1996, Geldof 2001, 2005).

Qualitative research on the self-organising ability of 'open source communities', by Wendel de Joode makes a serious attempt to remove self-organisation from the stage of metaphor. The research is focused on two open source communities: Linux and Apache, both of which are communities that develop software. The research has tested eight general principles of design, resulting from a study by Ostrom (1990, 2000) on factors of success and failure of long enduring communities:

> 'Therefore, exploration and sense-making were central elements of this study, which has led us to an open and qualitative approach. The inherent drawback of this approach is that it does not allow us to draw generalisable and more definite conclusions as to how open source communities are organized. It does, however, provide more support for future attempts in this direction. The framework adopted in this research is based on the design principles as they were first identified by Ostrom (1990). The framework has provided heuristics to analyze the communities and to identify a set of mechanisms that enable coordination and collaboration in the communities. Yet, as with any other framework, this framework too has the disadvantage that mechanisms and elements, which do not fit within the framework, might have been overlooked' (Van Wendel de Joode 2005: 215-216).

What is noted here, is that the framework that allows one to analyse can overlook local contexts, but still be meaningful. Complexity theory emphasises strong contextualisation (local interactions). Wendel de Joode rightly points out that decontextualisation, which entails generalisation, should be problematised. The jumping from one aggregation level to another inevitably leads to the reduction of rich data. But there's more: Van Uden indicated the risk that the concept of self-organisation will be perceived in organisation theory and practice, as another new management tool and recipe. Valérie Fournier and Rolland Munro (2004) have provided the concept of self-organisation with some important critical comments and point out the dark sides of this new management 'tool'.[33] The paradox which they perceive is both an increased 'managerialism', where the ideology and tools of management have penetrated the very fabric of society, and the 'virtual absence' of (senior) management. The latter means that the manager has withdrawn from the practice of traditional directive managing. As a result, employees are made increasingly responsible for the realisation of the organisation's goals and success in the market, in an endless struggle for resources among themselves. Manage-

[33] In the Netherlands, conferences are organised where Self-Organisation is heralded as the new management tool: doing more with less rules! See: http://www.managersacademie.nl/event/de-zelforganisatie?tid=TIDP104939XFE482E483A304252B95BD17A2C4C654CYI4&utm_medium=email&utm_source=Zelforganisatie_AAN_Event_2017_BdJ_2017%20-%20&utm_campaign=Events_2017_De%20Academie.

ment thereby acts more as a market supervisor. In this perspective on self-organisation, employees are pushed into the position of self-management and project management. Does this mean the end of Taylorism, which places the manager in the role of decision maker? Self-organisation conceived in this way is no different than the disciplining of employees has become more indirect, more virtual.

Fournier and Munro (2004) articulate this issue as follows: 'From this perspective, the dispersion of management can be read as an extension of liberal government; the discourse of empowerment and self-management enrol the self-regulating capacities of individuals as a resource in the achievement of organisational objectives (and individuals' objectives in the bargain), turning workers into people who will govern themselves (e.g. du Gay, 1996; Rose, 1989; Miller and Rose, 1995)' (ibid.: 13). It has been claimed that self-organisation calls bureaucratisation to a halt, promotes innovation and the flow of knowledge. Fewer rules, and less hierarchical management layers, flexibility and promoting creativity is the objective. The anthropologist David Graeber observes a reverse development in recent decades, which he formulates as follows: 'The Iron Law of Liberalism states that any market reform, any government initiative intended to reduce red tape and promote market forces will have the ultimate effect of increasing the total number of regulations, the total amount of paperwork, and the total number of bureaucrats the government employs' (Graeber 2015: 9). To this 'law', he links the observation that this also applies to the private sector and that the public sector and the private sector have become increasingly intertwined in the process of 'total bureaucratisation' (ibid.: 18).

Complexifying Self-organisation

In the previous sections, I have problematised the concept of self-organisation. This concept, which originated, among others in the natural scientific nonlinear deterministic sciences, was my starting point to explore social complexity. There are several researchers who have provided the concept with a new perspective. Based on their work, I will briefly sketch this perspective as a prelude to a further theoretical elaboration of social complexity concepts, which over time have begun to nourish my thinking and which formed the starting point of my research. On the one hand, the principles, and concepts of complexity by Edgar Morin and on the other hand the research model - the dialogic square - and theoretical concepts by Letiche & Lissack (2011).

In my research, these concepts gave a solid theoretical framework to the ethnographic material, and the ethnographic material gave a solid framework to the theoretical concepts.

Letiche & Lissack place self-organisation in a complexity perspective, in which Self and Organisation signify a shift in aggregation level. This relationship between Self and Organisation can be complementary, but also antagonistic. Self (identity) hereby is not regarded as a positivistic Stimulus-Response Machine or as the brain as software which is programmed by experience, but as a narratively [re-]constructed image of complexity. Narration creates a Self by means of storytelling, whereby a fragmented, incomplete image and dynamic vision of identity emerges. Self and organisation are connected by being each other's opposite – i.e. the one requires the other, and vice versa.

With this, Letiche & Lissack, take a distance from the notion that organisational processes, determine self-organisation, in which the existential dimension and presence of the narrative Self are marginalised. In this perspective, self-organisation doesn't escape the Tayloristic organisation principles and designs. If organisation organises Self, then Self is forced to the background or erased. In the words of Letiche & Lissack: 'The theory that claims that organizations organize themselves, and thereby embraces self-organisation seems to have a similar ontology that affords a singular holistic homology. How such an ontology of self-organisation can explain change, seems very problematic' (ibid.: 183).

The organisation in vitro, the world of dead structures, the organisation chart, definable facts, numerical facts as first cause, and dualistic causal relationships, SWOT-analysis, 2x2 Matrix, overshadow organisation in vivo: the existential, experienced, the possible, the present. In the organisation in vitro, there is no room for emergence, organisation in the making, that which is not yet knowable, because organising is just a series of choices, always between two options - i.e. external opportunities and threats, which are matched by internal weaknesses and strengths. This listing, labelling, and categorisation of strengths and weaknesses, opportunities and threats, suffers severely by the ailments that are discussed in chapter 4, as the vicious circle of today's dominant management paradigm. SWOT-analysis can only show the known and taken-for-granted strong signals and contingencies but has a blind spot for the uncertain, the paradoxes, and weak signals. Also, SWOT often mirrors the analysis of a specific, dominant, powerful management group and its consultants. In short, as I have witnessed in practice, SWOT will repeatedly marginalise emergence in organisation and/or organising. Or differently phrased: in Taylorist organisation theory, the manager needs to exclude change once and for all.

Clegg et al. (2016) describe these Tayloristic principles, as follows: '(a) that change is accomplished through rational plans developed, implemented, and monitored by management; and (b) that these change programmes are put in place to minimize future changes. Put simply, the promise is that if you adapt change ideas (from scientific management, for instance) and change your organisation accordingly, you will never need to change again' (ibid.: 375). In the theories of innovation, which take a theory

of complexity as a starting point, the principle of equilibrium is also questioned: 'equilibrium equals death'; a strong emphasis is put on self-organisation as a good medicine against Taylorism (Pascale 1999 quoted in Clegg et al. 2016: 379).

Complex issues that are mainly placed in the context of innovation and change, demand complex answers. The assumption is that self-organisation is the same as the absence of hierarchy. This leads to a paradoxical situation, in which on the one hand management governs innovation and change of the organisation and the organising; but on the other hand, does this without hierarchy or a blueprint. The fact that Pascale assumes that coping with complex issues above all is a management issue in which the instruments include: using conflict, disturbing the equilibrium, and enhancing self-organisation. This instrumentalisation of complexity, has, of course, the goal to achieve business success. Such a framing of complexity has been elaborated in a publication by Pascale with the telling subtitle: 'How successful companies use conflict to stay ahead' (Pascale 1990). The difference with Taylorism is that management books, which are based on principles of complexity, such as self-organisation, suggest that they break with the first Taylorist principle of organisation: hierarchy. Spontaneous processes of cooperation occur, such as the belief, in which the manager has the role to stimulate these processes and not direct them (Clegg et al. 2016: 379-380). Here a paradox is revealed: on the one hand leadership should stimulate and condition the complexity principle of self-organisation; a principle, which on the other hand denies leadership. On closer examination of these texts, it appears that in practice hierarchy is still an important foundation of organisation and/or organising, and that a lack of cooperation (self-organisation) in organisation and organising, is always top of the lists of complaints.

Both Letiche & Lissack and Morin, assume that self-organisation not only breaks with the first organising principle by Taylor, hierarchical order, but they also break with the view that self-organisation is an attempt to minimise future environmental change. In the view of Morin (1980), self-organisation is the expression of living organisation. Organisation from a mechanistic perspective is characterised as a weak system, which is highly dependent on the reliable parts of the system. A living organisation approach turns this upside down: the whole is much more robust than its parts. With this, the closed system approach to self-organisation is broken open. The components differ from the system but are also connected to it. In the words of Morin: 'At the same time that the self-organizing system detaches itself from the environment and distinguishes itself by its autonomy and its individuality, it links itself ever more to the environment by increasing its openness and the exchanges that accompany all progress of complexity: **it is self-eco-[re-]organizing**' (Morin 2008: 19, see also Morin 1977/1992). In this trilemma, the dualism of Self-Organisation is broken open by a third factor: Environment (Eco).

Letiche & Lissack add to this a fourth factor: Emergence. By the introduction in Morin's trilemma of a fourth factor, emergence, the trilemma Self-Organisation-Environment, is complexified by relating complex processes to emergence. As Letiche & Lissack assert: 'Emergence not only has to do with environmental change, but also with observer change. Emergence is a relationship between circumstance and awareness. World and consciousness are engaged in mutual constitutive interaction' (Letiche et al. 2011: 142). In this view, a fourfold logic is introduced: Self-Organisation-Environment-Emergence. I will elaborate on these notions in chapter 6.

A key factor in this process is the interaction between order and disorder, which opens the possibility of a living organisation. In this sense, emergence and disorder, are a constitutive and creative force, which shouldn't be minimised, but should, on the contrary, be embraced. The part is not only part of the whole, as a Taylorist and first-order cybernetic systems theory tells us. In the image of complexity, by Letiche & Lissack and Morin, it is added that the whole is also in the part; which in turn is in the whole (Morin 2008: 62). And thus, a strict reductionism, if you study the parts you know the whole; and a holistic view, if you know the whole, you know the parts, is rejected. Reductionism is correct in the case of an artificial machine, for example, a car, airplane, computer, building, furniture, but incorrect in the case of a living 'machine', for example a microorganism, plant, animal, human being (Morin 1977/1992).

The confusion, which in mainstream and even in the critical management literature, has arisen about the concept of self-organisation, is a product of the self-referential character of organising that lingers in an abstract void. To begin with, this is because Self in relation to organisation isn't elaborated. An important question, which could be asked based on Morin, is what does 'subject/self' mean. And what does autonomy mean – i.e. what does production-of-Self and re-organisation-of-Self mean in relation to the complex interaction between order and disorder, and the environment of the self. In other words: the generative causality (complex causality) of living self-organisations needs to be compared to the 'same' or 'by itself'-organisation (artificial machines) characterised by an inescapable causality (finality) (Morin 1980: 114-142; Morin 1977/1992: 178 & 257-271). Artificial machines are not complex, at most they are complicated.[34]

[34] Morin: "Complexity is not complication. What is complicated can be reduced to a simple principle like a tangled skein or a sailor's knot. Certainly, the world is very complicated, but if it were only complicated, that is to say, confused, multi-dependent, etc. it would suffice to perform well-known reductions: a game between a few types of particles in the atoms, a game between 92 types of atoms in the molecules, a game between four bases in the 'genetic code', a game between a few phonemes in the language. I believe I have shown that this kind of reduction, absolutely necessary, becomes cretinizing as soon as it becomes sufficient, that is to say claims to explain everything. The real problem, therefore, is not to reduce the complication of developments to rules with a simple base. Complexity is the base" (Morin 1977/1992: 386).

In line with the difference between complexity and complicatedness, Self refers to the concept of living self-organisation, or people who live and work in organisational artefacts (managers, governors, professionals, frontline workers, et cetera). The organisation consists of the structure and organising processes in which the group of people may or may not collaborate in a well-defined or perceived hierarchy such as an organisation chart, with objectives and intentions that justify the existence of the whole. The implicit assumption is that the whole (artefacts, structure, and process) is self-organising, by itself, like an automaton. To keep this automaton going, an arsenal of organisational concepts and tools or recipes have been devised during the last 125 years, which occasionally are replaced by other recipes. Old ideas parading as new ones, it appears to me.[35]

In fact, the concept of self-organisation can be understood as 'by itself-organisation' (no pun intended), because it obviously doesn't come by itself. The by itself-organisation probably is the implicit assumption (or desire) of the concept of self-organisation, but that would mean that the organisation can exist completely autonomous from its environment. Such a closed system, however, has a great disadvantage, which is insurmountable for living beings, that they perish by a maximum of entropy – i.e. it eats itself, like a candle. How this loose use of the concept of self-organisation could relate to 'thinking complexity', remains a mystery to me (Morin 1977/1992; Letiche et al. 2011).

In the following sections, I will elaborate several concepts and principles of complexity, which in my mind put a bit more flesh on the bones of the concept of self-organisation.

Social Organisation is *not* a Flock of Birds

In this section, several important concepts of social complexity theory will be discussed, which are related to the hitherto discussed casuistry (including Tranchée) and will later be explored revolving around water management in the Netherlands (chapter 7). The issue 'organising from efficiency' (dead organisation) or 'organising from emergence' (living organisation) brings us into the field of tension between order and disorder.

[35] Morin in relation to what he calls 'the family of machines': "Therefore, cybernetics, in revealing the physical being of a machine, has totally hidden not only the social megamachine of which it is only one moment and one element, but also the key problem of organisational *generativity*, proper to all physical, biological and social machines, except artificial machines" Morin 1977/1992: 168). I prefer to replace the notion of machine by 'living self-organisations' where it concerns the physical, biological, and social to avoid confusion over the term machine as an object. I reserve that term to the artificial machine, that has no self-repairing, self-generative, self-producing possibilities as living self-organisations do. A car where a part is broken down has no self-repairing capacity, where a living cell, the flora and fauna and humans are in a continuous cycle of (auto)generation (Morin 1977/1992: 152-178).

I start this section with a short reflection on the so-called rabbitduck[36]. Figure 14 shows two alternating images: either one perceives a duck, or one perceives a rabbit. This refers to the 'either … or' simplification of the dichotomy and dilemma: either we live in a world of ducks or we perceive a rabbit world. A vision of complexity of the rabbitduck adds something important to this: one can push the duck or rabbit to the background, but that doesn't mean that the duck or rabbit is absent and has no continued shadowing effect. The perspective on the world of the duck is different from the perspective of the world of the rabbit. This epistemological difference has consequences for the constructions we make of reality and thus also for our actions. Foreground (duck or rabbit) and background (duck or rabbit) stay connected and interact emergently.

Foreground and Background

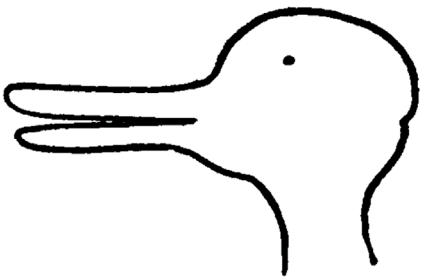


Figure 14

An important issue in this section is the relationship and tension between **order** (for instance the duck), as an expression of simplicity, and **disorder** (for instance the rabbit) as an expression of complexity.[37] Both the duck (theory of practice) and the rabbit (practice of theory) are inextricably linked, without one being able to get rid of the other. One could also read the image as the codification of ascribed coherence of

[36] 'An ambiguous figure in which the brain switches between seeing a rabbit or a duck. The duck-rabbit was "originally noted" by American psychologist Joseph Jastrow (Jastrow 1899, p. 312; 1900; see also Brugger and Brugger 1993). Jastrow used the figure, together with such figures as the Necker cube and Schröder stairs, to point out that perception is not just a product of the stimulus, but also of mental activity (Kihlstrom 2002).
Jastrow's cartoon was based on one originally published in *Harper's Weekly* (Nov. 19, 1892, p. 1114) which, in turn, was based on an earlier illustration in *Fliegende Blätter*, a German humor magazine (Oct. 23, 1892, p. 147)' See: http://mathworld.wolfram.com/Rabbit-DuckIllusion.html, consulted 14 October 2017.

[37] The reader may also turn this according to his/her perspective on both animals. I would like to note that both animals share a similarity: they can be processed in a dish.

the labels (the duck) and experienced coherence (rabbit). This touches on 'Either … or' as well as 'Both … and' rationality, which excludes the paradoxical, antagonistic, and complementary nature of reality by choosing the duck or the rabbit.

The rabbitduck shows 'presence in absence' and 'absence in presence'; or organisation in disorganisation and disorganisation in organisation (Spoelstra 2005: 110; Moor 2012: 219). This refers also to reading between the lines, ambiguity, veiled unveiling and unveiled veiling: 'organisations are masters in covering up the gap between the frayed reality and the ideal world, in the negation that they are empty-handed facing numerous issues (…)' (Moor 2012: 103). This raises the issue of complex rationality and rationalisation. The order (organisation) paradigm *ex*cludes ambiguity, uncertainty, and contradiction. The disorder (disorganisation) paradigm *in*cludes ambiguity, uncertainty, and contradiction. Both paradigms are based on single logic and simplification (reduction and disjunction). The rationalisation makes both paradigms immune to each other: order for one, disorder for the other. In the words of Morin: 'Thus, the paradigm operates the selection, the determination and the control of the conceptualisation, the categorisation, the logic (...). We cannot maintain the rigid link between logic, coherence, rationality, and truth when we know that an internal coherence can be rationalisation which becomes irrational' (Morin 2004: 236-239). Hereby, thinking in dichotomies or dilemmas is problematised. The rabbitduck figure also shows emergence between order and disorder: the duck and rabbit remain alternately present.

Critical Management theory focuses on how things get done and on the fluidity, complexity, and emergent qualities of practice. I too oppose rigid codification and the pseudo (social) science of ahistorical rationalisation, present in Taylorism and organisational first-order systems theory. Critical management studies embrace a practitioner perspective because it acknowledges the situated, embodied, concrete, and interactive. In this book, I relate practitioner knowledge and emergent pragmatism to social complexity. My claim is that social complexity can and needs to be developed as situated knowledge-in-practice (Cath in Jansen & Letiche (eds.). 2017: 97). In the following sections, I will continue to elaborate the concepts of social complexity theory and will lightly refer to my experience with water management in the Netherlands, to mitigate the pain of the reader wading through a theoretical morass. The experiences I draw upon are from narrative-ethnographic-anthropologic studies in the Dutch water administration that I undertook during the past decade, which will be presented and elaborated in chapter 7. The different perspectives on water management in this research were framed as (i) political governance, (ii) management/ managerialism, (iii) technological professionalism, and (iv) frontline professionals in practice. The assumption in the research was that the voicing of professionals in practice should be placed in the foreground, instead of the generic labels, models, rules, and protocols of the managers and technologists, as is the dominant situation today. The central question in the studies was how to overcome

the growing gap between the paper reality of the models, simulations, labels, rules and protocols, and the logic of the professionals as they experience their (work)place. In other words, to [re-]connect the rabbit and the duck in their ongoing dynamics. This refers to the 'protocol-practice gap': '[t]here will always be a gap […] between protocol and practice. The protocol-practice gap is not static and fixed, but fluid and changing' (Wackers and Kørte 2003, p. 202 quoted in Kouw 2012: 29; Cath in Jansen & Letiche (eds.) 2017: 97). The conflicting tension between theory and experienced practice, and the related problem of the strict divide between observer and observation was already noticed well over a century ago, for instance in the research of myopia surgery strategies: 'theory and experience are here therefore in contradiction' (Cath 1911: 120).

Efficiency and austerity measures form the dominant discourse in water management as expressed in the language of economics, which reverberates embeddedness in Taylorism and systems theory, informed by first-order cybernetics. Ascribed coherence prevails, as emergent coherence is denied and marginalised. I subscribe to an opposite way of organising water management – and other issues such as coping with climate change. I wish to focus on the needs of the local practitioners and the concrete social-cultural-epistemic environment of governance. For me, the local and specific network of the community and the professionals should come first (Cath in Jansen & Letiche (eds.) 2017: 97).

A good example of complex knowing is to be found in the story of a lock keeper in North Groningen. He serviced three locks, with the sea on the one side and the inland waterways on the other. He had to quit his job because a computer replaced him. What most struck him, he told, was that he was never asked how he exactly did his work. Because, if at low tide a lock has been opened, it can't be closed anymore. It is very precise work: 'I watch the wind, I observe the water, I talk to farmers.' He even watched the moorhens; if they were restless, it was a reason for him to open an extra lock. All that knowledge enabled him to keep water levels within a range of five centimetres. It was later discovered that the computer never approximated this. The farmers complained bitterly; they now had to deal with water levels of up to thirty centimetres of variation. The example shows that a judgment by an experienced practitioner about the lived-world is not only based on purely rational analysis, which uncritically underpins one's judgements on a computer simulated model. Judgement is also based on years of experience. The knowledge that is gained in practice breathes life into the model (Cath et al. 2011: 19; Cath in Jansen & Letiche (eds.) 2017: 97).

Evidently, organisation and/or organising can take different forms: a TINA point of view can be opposed by water management based on SARA. TINA is the acronym of 'There is no alternative' and SARA is the acronym of 'Some Alternatives Remain Always' (Sotolongo 2007: 133). SARA respects complexity; TINA denies it. The TINA-SARA opposition points at the difference between protocolled knowing and experiential knowing. The focus on protocolled learning leads to so-called knowledge management and to

pseudo-efficiency. My assumption is that experiential knowing and the tacit dimension, as Polanyi calls it, enhances coping with complexity (Polanyi 1966), by narrowing the gap between ascribed coherence or the paper reality of models, protocols, and policy documents; and the experienced coherence of practice and place (Letiche et al. 2011; Morin 1970; Cath in Jansen & Letiche (eds.) 2017: 97). Focusing on non-linearity in organisation and organising, I will make use of social complexity theory and especially of the concept of emergence. An important issue, here, is experiential knowledge, as opposed to explicit knowledge, or the world of simulations, models, calculation rules, and protocols. Here one needs to oppose the dynamics of 'place' as situated, to that of decontextualised positivist knowledge, to focus on knowing as a concrete emergent phenomenon (Kincheloe & Berry 2004).

In the next part of this chapter, I will introduce several social complexity concepts. I will begin with the French sociologist-philosopher Edgar Morin, who opened my eyes. Wake up calls are rare in life, but in this case, my complexity thinking in practice stumbled at the right moment into Morin's concepts. Based on Letiche & Lissack, I will blend these concepts into organisation and/or organising theory in the next chapter.

Thinking Complexity[38]

The concept of non-linearity that supports social complexity theory, puts the active attempt to understand human needs and hopes in the foreground to confront the ideology of efficiency with affectivity. The prison of simplicity, as it can only repeat the same, 'either separates that which is linked (disjunction) or unifies that which is diverse (reduction)' (Morin 2008: 39). The paradigm of Complexity challenges and criticises these notions. In recent decades, this criticism has induced a myriad of testimonials and it is notable that these pleas (for transdisciplinary research) are held increasingly by thinkers from different disciplinary backgrounds. I wish to place organisation and/or organising in the emerging discourse of social complexity theory. For Edgar Morin, this involves discarding trivial realism and illusive utopianism: 'utopia: meaning something whose location is nowhere' (Morin 2006: 135).

'Thinking complexity' requires a critical attitude and ethics of revolt, or a refusal of the fait accompli, that is, the refusal of TINA and the embrace of SARA. It is a plea for a lively science, taking science out of the lab and into the world, which entails a courageous attempt to connect Behavioural Social Science (BSS) to Human Social Research (HSR) (Agar 2013). Can Cain and Abel live in peaceful coexistence? BSS has adopted

[38] This section and the next section, is an adaptation of chapter 11 (Hole in the Fence) that is published in Jansen & Letiche (eds.) 2017: 97-110.

a 200-year-old epistemological mistake according to Agar. And we should take HSR, or in my words, narrative ethnography, more seriously. BSS puts (lab) experiments and mathematical equations in the foreground, and pushes the words and actions of people in their everyday lives, into the background (ibid.: 3). BSS frames a hypothesis before researching; HSR acknowledges multiple dynamics to the framing of hypotheses. BSS is theory testing; HSR is also theory generating. BSS models require standardisation and ceteris paribus. In BSS, assumptions about research subjects are often made to fit the theory's premises; HSR modifies assumptions about subjects and their world based on what is learned. BSS aspires to objectivity (researcher has no influence on the research); HSR rejects this goal as delusional, when humans research other humans (intersubjectivity) (ibid.: 12-15). HSR can be understood as ethnography, because it brings the meaning that people give to things in their everyday lives and contexts to our attention: 'ethnographic research is a route for research focusing largely on daily practices that are taken for granted and are therefore not further researched' (Slager 2012: 20). Rigorous study of daily practice is what is the issue here. Morin conceptualises this as 'thinking complexity'. His key concept is 'emergence', not as a superficial phenomenon as BSS wants us to believe, but as a depth-structure underlying the social, biological, and physical (Morin 1977/1992). Foreground (the known, described, determined) and background (the new, unexpected, and changeable) keep dancing in a complex choreography and interplay. Research entails: 'showing as far as possible the complex relationships forming the foreground and background to a text. Deconstruction reveals the text's silenced meanings, implicit assumptions, and unspoken intentions. Social complexity theory describes complex and emergent relationships, making it clear that ideas and communication are socially alive phenomena. The complexity principles of emergence and nonlinearity lead to the conclusion that causality may well be more an exception than the rule' (Letiche 2008: 233). You can put all kinds of (known) variables into the background in your Lab, but in the real world, the emergent interplay between them can ruin your observations. And what happens to the unknown, left out variables? Necessity and essentialism are overruled by possibilities and pluralism: 'order and organisation are inconceivable without interactions. Nobody, no object can be conceived outside interactions which have constituted it, and of the interactions in which it necessarily participates' (Morin 1977/1992: 52). Or in my own words: an epistemology that denies the nonlinearity, i.e. cause and effect are not linearly reducible to each other, of the experience of the world, and sticks to the linear universalism of the lab with its ascribed coherence, is false. Or: 'complexity science comes much closer to describing phenomenal existence than does laboratory science. Social complexity theory, like any other category or thought form, is socially constructed at specific aggregation levels. (…) One cannot shift from aggregation level to aggregation level without re-examining one's assumptions' (Letiche 2008: 234).

But what is meant by complexity and what is its significance for non-linear knowing? The worldview of 'scientific' simplicity tells the story of our refusal to accept the complexity of experienced reality. Simplification is made up of at least two ingredients: the 'one' and the 'other'. In the social, this entails sameness and violence. We resemble, we recognise each other, and that creates a 'we' versus the 'others'. The violence results from the simplification: 'me'/ 'other' and 'We'/ 'Them': 'Complexity is situated at a point of departure for richer, less mutilating action. I strongly believe that the less a thought is mutilating, the less it will mutilate human beings. We must remember the ravages that simplifying visions have caused, not only in the intellectual world but in life. Much of the suffering of millions of beings results from the effects of fragmented and one-dimensional thought' (Morin 2008: 57).

The worldview of simplicity stands opposed to the worldview of complexity. Simplicity requires a world where relationships are described as necessary and essentialist. Complexity is a world in which relationships are seen in terms of possibility and pluralism. The image, the label, or the model that we put onto experienced reality can push the experience violently into the background. We then talk of Simulacra or immersion. A well-known label in organisational theory and practice is 'efficiency'. A label that has become so self-evident that for many it needs not to be problematised. This is the black boxing process that can be called 'immersion', a concept that comes close to simulacra. Both show a lack of reflexivity in relation to formula, protocols and computer models: '…. epistemic opacity can be seen as a characteristic of black boxed technologies, in this case, simulations and models: the latter's underlying complexity and everyday functioning according to expectations reduces the likelihood that social actors can or will question the simulations and models at their disposal, which can lead to immersion' (Kouw 2012: 64). Or, as an experienced modeler puts it: 'models cannot prove anything, but can only show you the consequences of your own assumptions' (ibid.: 86). Or: 'the assumption that model's correspondent exactly to reality, the position known in philosophical circles as naive realism, is the curse of modern management theory and practice' (Letiche et al. 2011:78). The fundamental position of accepting (knowledge) uncertainty is deeply embedded in social complexity theory (Cath in Jansen & Letiche (eds.) 2017: 100-102).

Social Complexity Principles and Concepts

Social reality is characterised by dialogues between order and disorder, opportunities (as opposed to necessities), situationalism (as opposed to essentialism), the Self and the Other (as opposed to dichotomy), emergence (as opposed to fixation on certainty), self-organisation (as opposed to system) and the affective (as opposed to efficiency). Following Edgar Morin, I wish to distinguish three complexity principles:

First, a dialogic principle

While order and disorder, self and environment, deny each other; they also work together to produce organisation and complexity. The relation between order and disorder can be antagonistic (opposite and/or contradictory) or complementary. Morin makes a move away from the Hegelian dialectical principle in which thesis-antithesis and synthesis are at different aggregation levels. In the Hegelian dialectical principle, the contradictions are resolved in a superior unity (Morin 2004). The dialogic principle indicates that this unity remains complex; Unitas Multiplex – i.e. Unity in Diversity or the complexity of Complex Unity (Morin 1977/1992: 143-150). In other words: 'complex unity between two complementary, contradictory, and antagonistic logics, entities or bodies, which nurture each other and complement each other, also oppose and fight each other (...) in the dialogic, antagonism which remains present and an essential component of entities or complex phenomena' (Morin 2004: 234). The paradox between unity and diversity is *not* dissolved on a higher aggregation level, they are simultaneously connected and separated. Man, simultaneously, is a species, a society, and an individual; physical-chemical, biological, and anthropological: 'We must conceive of a unity which ensures and fosters diversity, a diversity which is part of a unity', in short: homo complexus (Morin 2001: 70-72). Dualism is broken up by adding a third factor in the movement from dilemma to trilemma: Morin adds the factor organisation to the dualism between order and disorder (see figure 15).

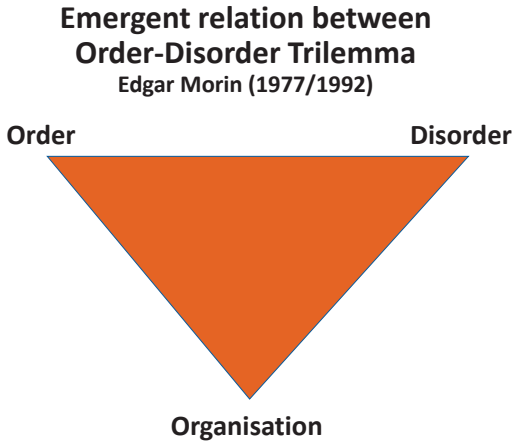


Figure 15

The generative aspect of the three emergent relationships (complementary, opposition and contradiction) between these factors is what opens up the organising quality of

disorder: 'Organization without disorder leads to a sterile, homogenous system where no change and innovation is possible. Complete disorder without order precludes organization' (Montuori in Morin 2008: XXXIV). Let me illustrate the above from my experience in practice. To begin with, narratives, for instance about water management, exhibit *complementary relationships* between self and other (speaker and audience, writer and public, officials and community, etcetera), wherein everyone seems attuned to the physical and cultural context. We familiarise ourselves with an issue; the dialogues are mainly interrelated and enhancing. In this relationship, a consensus is sought. But the issue can also, simultaneously, show *contradictory relationships* wherein author and audience, officials, and community, human plans/will and circumstances, do not add up. Then it is, simultaneously, a matter of apparent contradictions. Understanding and communication get a bit fuzzy and things feel a little less familiar, and; we also do not know how to act. The familiar dialogue starts to falter. But if you look closely, the mutual situation provides enough space to seek connections and different solutions, if self-examination (reflexivity) is sufficiently encouraged. A third relationship is that of *opposition*: it is black or white. But: without black, no white and vice versa. And then we dig in and quarrel about the truth of the issue. This creates a deeply felt moment of difficulty. We start to negotiate the (un-)truths of the disagreement. The shared, situated space starts to freeze, knowledge stops to flow, and energy is mainly committed to supporting one's own position. What I say is true and what you say is untrue. Then the complexity of the issue is reduced to the simplicity of a powerplay.

These three relationships play themselves out, usually all at the same time, sometimes sequentially, sometimes in the foreground, at another time in the background. And they can gradually change places. How complementary, paradoxical, or contradictory the issue becomes, there is (almost) always room to move between the relationships. A possibility of breakthroughs and of innovation can emerge if the dialogic between order and disorder is ongoing (Cath in Jansen & Letiche (eds.) 2017: 104-106).

If I put the order-disorder-organisation trilemma of Morin in a dialogic square, the emergent threefold relationships are shown (see figure 16). And this introduces the second complexity principle of recursion, where these different types of relationships interact.

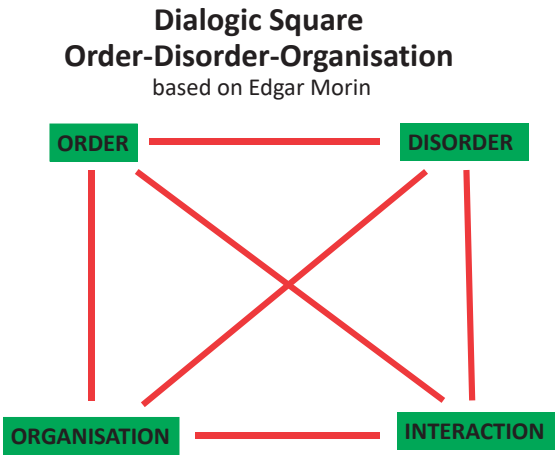


Figure 16

Second, organisational recursion principle

Recursive causality is more complex and richer than what the first order cybernetic regulation posits with feedback, which returns the system to a predetermined equilibrium as a thermostat does in a central heating system. Retroaction is replaced by recursivity, emphasising active organisational practice in terms of (re)generativity: 'a recursive process is a process where the products and the effects are at the same time causes and producers of what produces them (…). Society is produced by interactions between individuals, but society, once it is produced, feeds on individuals, and produces them. The recursive idea is, therefore, an idea that has broken away from the linear idea of cause and effect (...) because everything that is product comes back on what it produces in a cycle that is itself self-constitutive, self-organizing, and self-producing' (Morin 2008: 49-50). Recursivity emphasises that cause and effect cannot be separated, they are interwoven (complexus). Organisational recursion is a notion that is informed by second-order cybernetics, which poses the notion of recursive causality (Morin 1977/1992: 183-184 & 249; Morin 1986: 100-101). Recursive effects can be included in Morin's concept of **'ecology of action'**. The action is, apart from a decision and a choice, above all a wager. The action is a recursive dance between chance and information, and thus action escapes our intentions, and opposes the concept of programme, and therefore is vital to complexity (Morin 2008: 54-55). The action escapes the intentions of the actor because, in the environment of the intervention, it becomes complex. Contextual forces that immediately act upon our intentions, change the intentions in

a recursive dialogical manner, in which antagonistic, paradoxical, and complementary relationships interact simultaneously, and partly (re-)determine the intentions. Morin refers to this as a complex boomerang effect – i.e. it also leads to a high degree of unpredictability and ambiguity, certainly in the long term (Morin 2004: 40-46).

The recursive dialogic principle is further enhanced with a third complexity principle, the Hologram. This principle centres on the emergent relationships between the parts and the whole of a system, breaking up the reductionist *and* holistic systems theoretical notions. It tries to show the 'Unity in Diversity / Diversity in Unity' and thereby the dialogic recursive structures of systems.

Third, is the holographic principle

The part is in the whole and the whole is in the part. The sociologist is not only in society, society is also in the sociologist (Morin 1990: 172) – i.e. the chicken encloses the egg, the egg encloses the chicken (Morin 1986: 102). In each cell of the body, all the genetic information (DNA) of the body is present, but it doesn't explain the phenotype: 'The genetic algorithm does not explain the phenomenal existence, nor the bundle of emergent qualities that we call life' (ibid.: 251). Simplicity only looks at parts, isolated from their context (reductionism); while holism only looks at the whole, without regard to the specificity of the parts. In dialogic recursion, complex organisation requires that the complex whole tracks traces in the complex organised parts, and that these parts at the same time track traces in the complex organised whole (ibid.: 102).

I will explain this based on a note that I made during a visit to the Museum Schloss Moyland in Kleve, where the Van der Grinten collection of the early work by the German artist Joseph Beuys is conserved. At some point in the past, Joseph Beuys originated from a single composite cell, after which, through a series of cell divisions (gastrulation), a whole lifetime evolved and was lived. This resulting in thousands of drawings, assemblages, films, performances, lectures, and many books about his work have been published, and museum galleries have been filled. Put differently: 'It is not birth, marriage or death, but gastrulation which is truly the most important time in your life', according to the medical development biologist Lewis Wolpert (Dulmers 2011). This is an example of disproportionality between cause and effect and of emergent coherence. The holographic principle tries to connect the different aggregation levels of the parts and the whole (micro-meso-macro), respecting the emergent differences. I researched a complex issue concerning the take-over of municipal water management by a waterboard. Thirty plus municipalities were concerned, and the take-over process stagnated over a prolonged period of time. I assumed that the holographic principle could be helpful. Instead of discussing the whole (30 plus municipalities) it would be

interesting to research a park in a city (very small part of the whole) that might contain the complexities of the whole. In this small specific local area (a city park), an abundant complexity of issues was present, reaching from the European, to the national, to the provincial, to the very local levels of policymaking. The part was to be found in the whole, and the whole in the part. And they could not be reduced to each other (Cath & Geldof 2015, see also chapter 8). I imagine that Morin stumbled on his holographic principle when he was studying the effects of modernisation of society on a remote village in the French countryside in the 1960s (Plozévets studies). The study shows that the village is not an isolated part of the modernisation process - i.e. the village resonated holographically to the rest of France (the whole) and vice versa (Morin 1970). The part cannot be reduced to the whole and the whole cannot be reduced to the part: Unitas Multiplex (Morin 1977/1992).

In figure 17, Morin's three principles of complexity are shown in their mutual relationships.

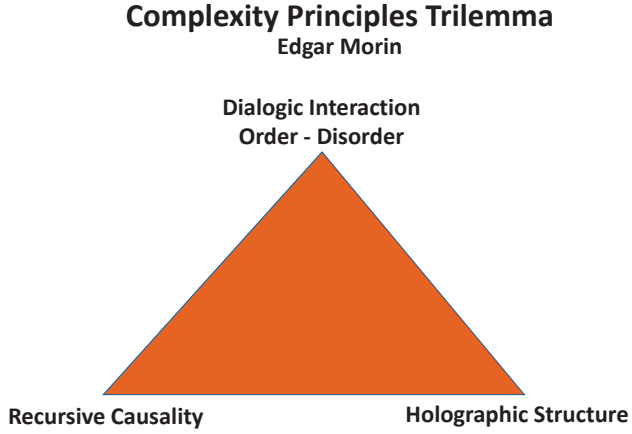


Figure 17

The complexity principle of the hologram is linked to the complexity principle of recursion, which in turn is linked to the dialogic complexity principle, thus forming a trilemma.

The dialogic principle complexifies the first order cybernetic loop of retroaction through the trinity of three complex relationships that act simultaneously: complementarity-opposition-contradiction. The recursive principle complexifies the dialogic principle in a generative way, which moves into second-order cybernetics by integrating the observer in the observation and vice versa. The holographic principle with its double inscription points to the recursive dialogues between parts and the whole (Morin 1986: 104-105, Morin 1990: 177).

As we have seen in the dialogic square analysis of Tranchée in chapter 3, these alternating trilemmas are valuable to better show complexity. This is not possible with the binary relationship in a dilemma. I call to memory what I wrote about this in Chapter 3: In all four trilemmas, the three complex relations (opposing, complementary, and contradictory) were present simultaneously. They trade places regularly, without disappearing (rabbitduck). Trilemmas break the dichotomy of the dilemma, and thereby break open the binary nature of thesis-antithesis. To this issue, of dilemma versus trilemma, I will return extensively in the following chapter by discussing the dialogic square of Letiche & Lissack which tries to show emergence added as a fourth factor. In their dialogic square, the three-fold logic of Morin is further complexified by a four-fold logic. I will also elaborate on the nature and characteristics of the relations. In any case, it is important to note already here, that by introducing a third factor in a dichotomy, complexity (dynamic context, ambiguity, and multiplicity) will be better respected. I will now try to breathe some air into Morin's three complexity principles.

Different Realities at the Same Time[39]

Participation is a concept that evokes different images. It can be understood as a complexity principle that puts emergence into the foreground – i.e. dialogic recursive relatedness of all participants is evoked. When issues are ambiguous, uncertain, unknown, or unknowable, and indeterminacy and paradox prevail, dialogic recursive participation offers solace. But also, more daunting images of participation can be painted, see in the simplicity paradigm and the complexity concept of self-organisation, where the ascribed coherence of codified representation replaces the participant. In the simple form, the organiser determines the processes and the organisation of the participation; in the complex form, the participant has decisive influence over the processes. This is called the participation paradox (Slager 2010). This paradox has been researched in the context of terminal healthcare. As I have noted in this study, the question is raised whether an organisation which has been founded to do good (terminal care) hasn't gradually forgotten what it was established for. Hasn't the preservation of the organisation become more important than, in this case, the care at the bedside of the terminally ill? An issue which thereby is identified is the great effort it takes to achieve reflexivity in organisations; the research shows that in the daily practices of organising, (clichéd) stories about it, and unexamined self-evidence, dominates (Slager 2012). A process is shown in which the daily practice of caring is cut loose from the intentions with which it originally began,

[39] This section is an adaptation of a chapter I wrote: Cath, A.G. (2013), in Dedding, C. & Slager, M. (Eds.) (2013).

due to a lack of recursive dialogues about the intentions (ecology of action). The work at the bedside and the emergent coherence which that entails falls into an existential and ethical void with respect to the organisational planning. In other words, a caregiver at the bedside isn't concerned with strategic planning, but (in)directly suffers from it (holographic impact). Think for example of the scourge of minute care in home care. Thus, the patient and caregiver has become marginalised, also in relation to each other – i.e. the participation objective remains a management tool that has become meaningless in the emergent dynamics of practice, in this case caring for the elderly.

A new discourse is being developed to provide participation with a complexity perspective. Under complex conditions, standard solutions and measures quickly lose their effectiveness. This is partly because small, weak signals suddenly become magnified. Linear causality and first-order feedback loop causality is disturbed by recursive causality (Morin 2008: 61). Let me tie an assumption to this: if the objective of participation is that participants visibly and tangibly influence the decision making and that they coherently experience their contribution in the process; then the process and the underlying factors are complex. In other words, if participation is perceived too one-sidedly as a technical, institutional, management problem, with all its depoliticising effects on practice, it denies the complex nature of participation. We then remain caught in a representations dilemma: experienced practice is represented by a select group of representatives of that practice. The patient then is represented by a physician, a health care provider, a patient association, or other groups of interest. Representations of participation than have two different meanings: 'talk about' or 'talk on behalf of' (rather than 'talk to') (Hickey & Mohan (Eds.) 2004). The third factor (patient) in the trilemma patient–care giver-management, is removed. This representation problem is particularly present because a lot of participation is nothing more than the representation of large groups of people by a very small number of actual participants (ibid.). Thereby, the social complexity of participation, experienced emergent practice, is avoided.

In an ethnographical-narrative of research in which I have participated as a researcher, the transparency paradox between supply and demand in the care for the elderly has been explored. In this study, the paradox became visible in the stories of patients about their decision processes. Patients determined their choices in relation to their socio-cultural context, their personal life histories, and in dialogue with their immediate surroundings. These direct, experienced, social processes were not easy to capture in the rational choice protocols of the care providers. This often results in a clash of differences in logic between demand (patient) and supply (caring person and management) (Maas et al. 2010). Recursive dialogues between participants about the emergent nature of caring, and ongoing reflexivity on the organisation and/or organising of care, is repeatedly overwhelmed by the ascribed labels of directives and regulations (Letiche 2008; Maas et al. 2010; Slager 2012).

Acting in complex circumstances requires actants of real flesh and blood and not just (social) epistemological argumentation; that is, one needs to address how actors (real people) can act *in* their situation and location when confronted with emergent events. Only with interaction between order and disorder is social complex organisation possible, which is open to change, growth, and opportunities. It, therefore, is important to give the stories, and the therein embodied experiential knowledge of social organisation, sufficient attention in their relation to the (formal) narratives of social organisation. In short, one needs to display the connection between foreground and background as much as possible. Through this connection, the dichotomy between different logics can be transcended and transformed from a dilemma into a trilemma. In Morin's words: 'The more it becomes complex, the more order is mixed and the more intimately disorder and antagonisms, uninhibitions, fortuities play their role in the being of the system and its organisation. Thus, the triad disorder/order/organisation takes an original character at the heart of systems. Organisational order is a relative order, fragile, perishable, but also, we will see, evolutive and constructive. Disorder is not only anterior (interactions by chance) and posterior (disintegration) to organisation, it is present in a potential and/or active fashion. The exclusion of disorder characterized the classic vision of the physical object; the complex organisationist vision includes disorder' (Morin, 1977/1992: 130).

Concluding Remarks

As mentioned earlier, in recent decades Complexity Science rejoiced in an increased amount of attention in various fields of scientific research: in the natural sciences, the life sciences, the humanities, and the social sciences. Policy papers, policy advice, management textbooks and more popular literature begin and end with references to the complexity of the issues at hand. I will, therefore, start with a disclaimer: organisation and/or organising from a complexity perspective is not a choice menu, through which the manager obtains access to an additional tool in the toolbox. Complexity calls for a radical epistemological break with the dominant discourse of management (thinking simplicity), 'and not a fudge that seeks to reconcile modernist demands for generality within the context of localized circumstances of concrete organising' (Knights 2004: 14, quoting Letiche 2004). And to this a warning could be added: 'At best the term - complexity science - would then be considered to be useful only insofar it can provide appealing metaphors for old concepts that one may want to present in original ways. Worse, the term could be adopted to justify rather dubious concepts as having benefitted from the latest insights of the new science. It is difficult not to note the inherent similarities between some recent academic publishing on Complexity and the myriad

of publications underlined by ideas such as "improve your sales thanks to the insight of Complexity"!' (Popolo 2007: 215).

I have discussed that the dominant management discourse puts self-organisation in the foreground as a conceptualisation for thinking the complex. The emphasis has been put on local interactions that escape the hierarchy of organisational blueprints. The notion of self-organisation originates from nonlinear deterministic complexity theory in the natural sciences. In most cases, it is understood as a next management recipe in coping with social complexity. In a more critical view self-organisation implies a further disengagement of management from organisational frontline practices. This externalisation of management is an important hallmark of the simplicity paradigm. I argue that the self-eco-[re]-organisation concept of Morin gives space for disorder - i.e. emergence as a constitutive force in the dialogues between order, environment, and disorder. Morin stresses that self-organisation is at the same time autonomous and unified with organisation. Letiche & Lissack broaden the notion of self-organisation by pointing out the difference in aggregation level between self and organisation, and introducing emergence as a fourth factor to the analysis. Self interacts continuously with a group (organisation), environment and emergence. This concept will be elaborated in the next chapter. Morin and Letiche & Lissack both argue for a shift away from an analysis that is based on dichotomy, which is the foundation of thinking simplicity, towards a view that finds its basis in trilemmas. Thus, complexity is introduced, because of a trilemma – where at least three factors are considered – leaves room simultaneously for multiple relations between factors – i.e. complementarity, opposition, and contradiction.

Building upon the concepts of social complexity that have been discussed in this chapter, in the next chapter the central theme of the book will be elaborated in more detail: emergence in organisation and/or organising. After having confronted simplicity with complexity, the third factor of the organisation and/or organising trilemma, emergence, will be discussed. In the next chapter, I will elaborate on the move from a three-fold logic (trilemmas) towards a four-fold logic that is proposed in the dialogic square of Self and World by Letiche & Lissack.

Chapter 6

Thinking Emergence

We need to be clear; emergence is neither good nor bad. It is without intrinsic value. It simply is. Yet, emergence is perhaps the greatest unmet challenge facing managers, organizations, and those who study them. In our drive for greater efficiency, we have ignored emergence.
Hugo Letiche & Michael Lissack, with Ron Schultz (2011: 17).

Essential properties are thought to be unchangeable and eternal because they were uniquely and separately created. But now that advances in cosmology and the theory of evolution have refuted the notion that species and galaxies are eternal and unchanging, the question has become "Is change to be understood as an unfurling of preformed potentialities, or do qualitatively new phenomena emerge over time?
Alicia Juarrero & Carl A. Rubino (2008: 1-2).

Emergences, new qualities, are at the same time phenomenal qualities of the system. As I have said, they are logically undeducible and physically irreducible (they are lost if the system dissociates). But, by that very fact, they constitute the sign and the indication of a reality exterior to our understanding. We will meet this idea again along our way: the real is not what allows itself to be absorbed by logical discourse, but what resists it. It seems to us here, therefore, that the real is not found only hidden in the depths of "being" (Fr. l'être); it springs also to the surface of the "active being" (Fr. l'étant) in the phenomenality of emergences.
Edgar Morin (1977/1992: 107).

Emergence Is

This chapter elaborates on quite fundamental theoretical concepts. Readers who prefer a more light-hearted version of these concepts, I invite to leaf through the next chapter, which will breathe some air into these concepts, informed by the water management casuistic.

Embroidering on the social complexity concepts elaborated in the previous chapter, this chapter deals with the central theme of this book: emergence in organisation and/or organising.

It is the third factor - in addition to Simplicity and Complexity - in the organisation and/or organising Trilemma (see figure 18). My reasoning so far emphasises the following: emergence marks complexity and is denied in the simplicity paradigm. Emergence as a third-factor breaks open the dilemma between simplicity and complexity. My assumption is that this breaking open will help to further investigate and clarify the relationship between the simplicity paradigm and the complexity paradigm. By bringing a third factor into play, the dilemma simplicity-complexity, as previously mentioned, is considered from three alternating complex relationships (complementary, contradiction and opposition). As mentioned in chapter 1, this means that these relationships have an emergent character. They are not absolute: either complementary, or contradictory, or opposing – i.e. it depends on the perception and contextualisation through dialogues. Therefore, I will focus on the issue of the aggregation level of analyses (macro-meso-micro; self/group; part/system) in relation to emergence; and what emergence might be, how emergence relates to coherence, and how one can research emergence. This chapter discusses emergence in the organisation and/or organising context. I now address the fourth floor of Morin's Complexity Edifice, which I have presented in chapter 1. This fourth floor is under (de)construction: the question is whether emergence can be experienced; and if so, whether this can lead to coherence and adjacent affordances in an organisation and/or organising context. Affordances are described by Letiche & Lissack as follows: 'Affordances are the possibilities for ideas or actions, suggested to the subject by some aspect of the present situation, environment or encountered communications. A chair "affords" the opportunity to sit, or to pose objects (used as a table), or to climb (used as a ladder), or to warm ourselves (if burnable)' (Letiche et al. 2011: 19).

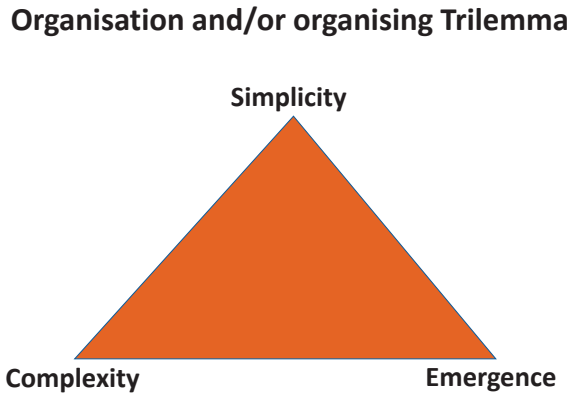


Figure 18

Emergence, in my view, is not a tacit or hidden force living on Olympus that plays all sorts of games with us. Emergence, self-organisation and other complexity concepts, are not presented in this book as first principles that can explain the world better than the first principles of the simplicity paradigm (Letiche et al. 2011; Stacey et al. 2016; Morin 1977/1992 & 2008). First principles as founding determinants are rejected in a complexity view. Letiche et al. assert: 'Social complexity theory in our work is not a (thinly disguised) metaphysics of organization (…) possibilities of emergence are generated and defined in relationship to other dimensions. Emergence is relational, or it is not at all. It happens with and to the individual, social and circumstantial' (Letiche et al. 2011: 58). The assumption in mainstream organisation theory is that an arsenal of analytical management tools can reveal emergence, in such a way that we can control it. In this view, emergence is part of a non-linear deterministic discourse. It will, by now, have become clear to the reader that I wish to problematise this line of thought.

In organisation and/or organising, emergence is a quality, which refers directly to coping with complexity: 'Emergence is marked by complexity' (ibid.:12). This means that: 'Social complexity theory posits that emergence is not a surface level phenomenon answering to depth level hidden laws - there is no structure to emergence's occurrence' (ibid.: 223). And subsequently: 'We are interested in emergence in organization; thus, in the context of people working together. (…) We are trying to understand emergence/coherence as immediate event, action, and occurrence' (ibid.: 225-227). This is my position as well; emergence entails the concrete, complex experience of everyday organisation and/or organising, and the challenges met by anyone dealing with organisation and/or organising, or studying it.

As I have argued in the previous two chapters, emergence is excluded or denied in the dominant management discourse. In that discourse, emergence is an annoying surface phenomenon of organisational processes that should be anticipated by management. In the Taylorist view, emergence is the consequence of mismanagement. Previously, I have discussed the paradox of *foreseeing the unforeseeable*, whereby the practice of organisation and/or organising should conform to simple abstractions (theories, concepts, metaphors, analogies, and models) about that practice. In this view, one principle explains the world. An important issue in this context is the problematic divide between experiential knowledge or the tacit personal dimension of knowledge, and explicit knowledge. Explicit knowledge is characteristic of the world of simulations, models, attributed labels, calculation rules, codification, and protocols. Experiential (tacit) knowledge is not decontextualised positivist knowledge, present in modelled emergence.

Let me give an example of emergence. Every summer, for the last ten years, I faithfully visit the Ciné Pause film festival in Donzy-Le-National, a small rural village in the hills of Cluny in the department of Saône-et-Loire (71) in southern Burgundy, France. The film festival came accidentally into being in 1973. As the website narrates: 'In 1973, a film was shown for the first time in a barn, the film "Poil de Carotte", with François Cohn, Monique Chaumette, and Philippe Noiret, by the cineast Henri Graziani, who has his holiday home in the village. An unyielding grain was sown in the earth of Donzy-le-National, which, from 1990 onwards, germinated and expanded into the film festival it is today. It offers film lovers from near and far the opportunity to relish four days in a plethora of documentaries and high-quality movies. The festival has a permanent staff but is also carried by dozens of local volunteers and an abundant network of film professionals, mainly from Paris, but also from the region. Besides the main festival programme, different kinds of (film) events are now organised throughout the year and an expansive (international) network has been built with other film festivals and the music world (jazz). The emergent dynamics have led to local film production and all kinds of related activities'.[40]

In this final chapter of the theoretical part of this book, lines of thought that have been developed in the chapter on simplicity and complexity converge. Firstly, I will reflect on the importance of taking difference in aggregation level seriously. Both Morin and Letiche & Lissack stress this point. What is meant by this? You can look at a phenomenon from a macroscopic (global), mesoscopic (regional) and from a microscopic perspective (local), perspectives that differ in their contextualisation. There also is an aggregation level difference between a physical, a biological and anthropological

[40] See: www.cinepause.org.

perspective; and a difference in aggregation level between Self and Collective (organisation). (Self-)organisation is the opposite of Self (is not Self). Self can experience emergence, organisation (or group) cannot (see further). There is also a difference in aggregation level between environment and emergence. And a difference of aggregation level between parts and system. I will give several different descriptions of emergence from the literature, and in the work of Letiche & Lissack and Morin. Next, I will explain the research framework of Letiche & Lissack, the dialogic square of Self and World. By using this research framework, one can, *indirectly*, try to show complexity marked by emergence. For both Morin and Letiche & Lissack, as I have discussed in the previous chapters, this is only possible if the events are analysed through the alternating three complex relations – i.e. those of complementary, contradiction and opposition. This means that dichotomy is exchanged for trilemma. On the wobbly staircase to the fourth floor of Morin's Complexity Edifice, the trilemma is pried open in turn by introducing a fourth factor. Thus, a complex foreground-background (rabbitduck) play arises between different trilemmas, which to some extent already became visible in the Tranchée casuistic in chapter 3.

Aggregation Level Matters

I have made a distinction between two paradigmatic positions and discourses, the paradigm of simplicity and the paradigm of complexity, and the role that emergence plays as a game-breaking third factor. In the first chapter (Preface) a distinction was made between three possible, interacting, strategies to produce knowledge about organisation and/or organising (epistemology). Both the organisation and/or organising trilemma and the knowledge trilemma (Mode-1, Mode-2, and Mode-3) are of crucial epistemological interest in organisational studies because of their influence over outcomes and decision-making processes.

I will now dwell briefly on the importance of the difference in aggregation levels, or abstraction levels (micro-meso-macro) at which one studies organisation and/or organising in a given system. In short, this addresses the translation problem between the studying of the system as a whole (holism), and the studying of a part of a system (reductionism). Does one explain events from a generic point of view (weak on context) or from a specific point of view (strong on context)? In addition, I maintain that there is an important difference in aggregation level between the various knowledge disciplines (physical-biological-anthropological) with which one studies a system (Morin 1977/1992).

An important starting point in the complexity studies of Morin is the critique of the fragmentation of knowledge, or how one can be locked up in one's own field. Morin

wants to let knowledge flow between the different scientific disciplines. In his view, complex issues can only be addressed via transdisciplinary knowledge production. Humans in his view are hundred percent physics, hundred percent biologic and hundred percent anthropological (Morin 1977/1992). These aggregation levels are irreducible to each other. This position hinges on his demand for continuous reflexivity about one's own assumptions, paradigmatic position, and representation of reality (qualitative/quantitative), including ongoing contextualisation and awareness of the epistemic culture in which one's knowledge is produced.

I observe that in organisation studies, concepts and paradigmatic positions from the natural sciences are quite carelessly adapted to the socio-cultural-political-economic domain. Epistemological blindness is persistent, *especially regarding complexity concepts*. Translation of complexity concepts from the natural sciences (physics, but especially the life sciences) to the social sciences cannot be done without further consideration. Basic assumptions and the different discourses should be held against the light anew. If you change aggregation levels (system level), you must bring this change up for discussion. Well-known metaphors and analogies from the natural science complexity theory are the 'butterfly effect', or the Lorenz Attractor (Casti 1997; Gleick 1997/1988), the 'Boid' (Mitchell Waldrop 1992) and 'the anthill' self-organisation metaphor (Goodwin 1994). I will give a short elaboration; first of the 'butterfly effect'. If occurrences are nonlinear then a small event (say the flapping of a butterfly's wings in the Amazon) could have a major effect elsewhere - i.e. cause a hurricane in Florida. The metaphorical story is a reaction to known difficulties in predicting the weather. But it is nearly impossible to determine which events are crucial and which events are irrelevant when trying to predict the weather over a longer period. Tracing all relevant causal connections in social interactions would be even harder. If you could build (on a computer) a general circulation model and change the pressure over an area in South America by a tiny amount, equivalent to the flapping of butterfly wings, and you then could wait and see if the tiny difference grows exponentially until it becomes visible in weather patterns, you would still only be running a simulation. A storm might occur at a certain moment in one run (with the 'butterfly') that did not occur at that location and time in any of the other runs. But if any such thing has ever really happened in nature, where, when and how it happened, remains indefinite. In the 'real world', we would never be able to find the butterfly. Furthermore, if we assume that life and social events are (often) over-determined (i.e. that there are more than enough sufficient causes to what occurs), then the value of the simulated or metaphorical 'proof' is very limited indeed.

The second example, the Boid: flocking illustrates how a seemingly spontaneous and very complex order can be created from simple rules. What looks or seems to behave like a flock of birds, a school of fish, or a swarm of insects, can be simulated via flocking (The Boid). Complex motion and interaction are, for instance, simulated via

three rules: 1. separation – do not crowd one's neighbors, 2. alignment – head in the same direction as one's neighbors, and 3. cohesion – steer to a position in the middle of the group of neighbors in the flock. In the simulations of non-linear deterministic complex systems, it is assumed that all agents are homogeneous and that they all follow the above-mentioned rules (Stacey & Mowles 2016: 252-253). With the three simple rules, a flock can be simulated that seems to move with complex motion and interaction (swarming), which would be very hard to predict otherwise. Of course, there is no (ultimate) proof that real birds, insects, or fish 'think' or 'act' in any such way. For the describing of behavior, flocking may be an enthralling metaphor or analogy, but nothing more.

Finally, in self-organisation, the 'leader' supposedly does not give direct orders or tell the others what to do. In the anthill, each ant is an autonomous unit that reacts to its local environment. Without centralised decision making, the ant colony exhibits complex behavior. But this does not prove that management is unnecessary or that 'order is (really) for free' (Letiche et al. 2009). These computer simulated metaphors, analogies, and their underpinning principles, such as bifurcation points, strange attractors, butterfly effects, edge of order and chaos, and 'order for free', depend on two contradictory lines of thought: a mechanistic frame and a complexity frame. As Kreps asserts: 'It is with respect to the understanding of time, key to the understanding of life, and of living systems, that these scientists remain stuck, all too often, in the mechanistic frame, wherein many respects they have been instrumental in moving on from it. Ultimately, with time, one must also allow consciousness – that which experiences duration, the memory inherent in durational succession – and this, in science, (…), seemingly remains taboo. (…) Consciousness, in other words, must be considered if the development of the complexity sciences it to be truly radical, and finally grasp at an understanding of reality' (Kreps 2015: 202-203).

The butterfly effect, the Boid and the anthill, are metaphors that endeavour to describe the non-linear (complex) character of the (social) reality of social organisation and organising. The simulated behavior of butterflies, birds, fish, insects, and ants, are a rich source to draw from when we want to capture the complex social organisation and/or organising processes of human beings. This is an old tradition in management sciences.

A common example of organisation metaphors is provided in Gareth Morgan's work, of which the most important metaphors (images) are the machine metaphor (organisations as machines) and the organic metaphor (organisations as organisms) (Morgan 1986). The machine metaphor (clockwork universe) stems from the Cartesian-Newtonian worldview, and the organic metaphor stems from the evolution theory of Charles Darwin. The machine metaphor forms the basis of Taylorism, which constitutes

the starting point for modern scientific management thinking. The organic metaphor partly forms the basis of systems thinking in organisation and/or organising.

The unproblematic transfer and representation of concepts and metaphors from the natural sciences is largely based on computer models and simulations. Here we run into a fundamental issue: can one, unproblematically, translate to the real world what one establishes in the laboratory? A long line of authors resolutely dismisses this course of affairs (Letiche & Lightfoot 2014; Regeer 2009; Petersen et al. 2011; Funtowicz & Ravetz 1993; Morin 1990; Nowotny 2001/2008; Kincheloe 2004; Agar 2013).

In line with this, the issue of the modeling of reality, and the reality of the model plays a role: can you get more out of a model than you have put into it, is the question here. Can a model produce novelty, as the complexity maxim: 'the whole is more than the sum of the parts', claims (e.g. Kouw 2012)? Morin adds a notion of double blindness here: we only see the constituent parts (reductionism) or we only see the whole (holism). The consequence is, according to Morin that 'the whole is less than the sum of the parts: this means that qualities, or properties attached to the parts considered in isolation disappear in the system. Such an idea is rarely recognized. Yet, it is deducible from the idea of organization and lets itself be conceived more logically than emergence' (Morin 1977/1992: 109). Morin has countered the double blindness by introducing his complexity principle of the Hologram (see the previous chapter). The problem between the knowing of reality through models and simulations, and it's opposite the knowing of reality through experience comes forward. Then, likewise, the difference between ascribed, labeled coherence, and experiential, emergent coherence, surfaces (see further). These issues form an important aspect of thinking emergence as informed by social complexity. I will now discuss a few, different, perspectives on emergence, and how the concept of emergence is at the centre of attention in complexity studies.

Emergence: Miracles and Nasty Surprises[41]

Generally, emergence is understood as the naming of something new (novelty) that cannot be deducted from the elements constituting the previous state. This description refers to the nonlinear nature of emergence: the relationship between cause and effect is disproportionate, which is also known as sensitivity to the initial conditions. This refers to the butterfly effect: tides are fully linearly predictable (cause and effect are proportional), the weather is not; both are part of the climate system. Morin asserts: 'we call emergences the qualities or properties of a system which present a character of newness in respect to the qualities or properties of the constituents considered separately

[41] Letiche & Lissack 2011: 1.

or arranged in another type of system' (Morin 1977/1992: 103-104). Cause and effect are interwoven and therefore not easily distinguishable from each other. This refers to Morin's recursive causality complexity principle. Roughly, one can distinguish two approaches to emergence: a nonlinear deterministic view, and an adaptive view that puts indeterminism in the foreground. John Holland (1998) is a good representation of the nonlinear, contextualised, deterministic approach to emergence. In his approach, agent-based computer simulations are used. As discussed above, one can generate nonlinear patterns, based on simple rules as the example of The Boid shows. One can simulate an ant-hill or a game of Checkers, blame butterflies for the weather, or find the culprit that generated a traffic jam. The basic thought here is that local agents (birds, butterflies, ants, or people), without an all-compassing pre-given blueprint, self-organise nonlinear patterns that move through dissipative structures to generate global patterns. And, if we overcome our ignorance, we ought to be able to predict these patterns, and so, at the end of the day, be able to intervene. Determinism denies fundamental unpredictability, uncertainty, ambiguity, paradox, and indeterminacy. Holland asserts that we must overcome mathematical and cognitive obstacles and that the way to overcome these obstacles is to build better models: 'the exploratory phase should lead in time to an understanding of conditions that *assure* emergence' (Holland 1998: 242). And he continues: 'it is important to concentrate on the full-fledged version of reduction that takes interactions into account' (ibid.: 245). Holland acknowledges that the classic reductionist approach that 'reduce the system to parts and, once you understand the parts, you will understand the system', will not work. Studying one ant, will not lead to understanding the colony, nor will studying one person lead to understanding the community or society. Systems that exhibit emergence should be approached with the 'more difficult form of reduction, using overlaid hierarchies (…) Emergence, then, is a matter of macro laws and the overlaid constrained generating procedures that result', which also means 'that the fact that systems exhibiting emergence require studies that go beyond the simple reduction of studying isolated parts does *not* mean that those systems are beyond our grasp' (ibid.: 245-246). In a comment on Holland, Stacey & Mowles conclude: 'What is happening here is someone pointing to radical unpredictability, emergent novelty through a radical notion of self-organisation and then immediately assimilating it into orthodox science and so neutering its implications' (Stacey et al. 2016: 261).

That is why the nonlinear deterministic models of emergence are so well received and copied in management studies: they provide the proper analogies and metaphors for managers to think that they are in control of emergence through their labels and codes. An example of old ideas parading as new ones. But as Letiche & Lissack assert: 'Ascribed coherence and emergent coherence each have their role. (…) Efficiency has made great contributions, but the drive for efficiency comes at a hidden cost – a reduction in the capability to see what is fresh, experience the new, and react to unexpected possibilities.

Emergent coherence is about process, not lists; it is about stories not labels. It is about cues and our reaction to them, rather than about codes' (Letiche et al. 2011: 13).[42] I will further elaborate on the relationship of these different aspects of coherence in respect to coping with complexity. The issue is related to the notion of the difference between emergents and resultants. 'Emergents' refer to the unpredictable and 'resultants' refer to the predictable. In the wording of Lloyd Morgan: 'It may be said, then, that through resultants there is continuity in progress; through emergence there is progress in continuity' (Lloyd Morgan 1923, quoted in Juarrero & Rubino 2008: 101). These notions resonate with the complexity concepts of Henri Bergson, which have inspired, implicitly and explicitly, researchers of complexity. As Lloyd Morgan in 1923 states: 'Such emergence of the new is now widely accepted where life and mind are concerned. It is a doctrine untiringly advocated by Professor Bergson' (ibid.: 100).

So, let me focus for a moment on some essential Bergsonian concepts in relation to complexity. David Kreps (2015) has attempted to connect Bergson's core ideas to complexity theory, focusing on complex adaptive systems theory in environmental biology, informed by Kaufmann and Goodwin. In the scope of this book, I will only mention the relationship of Bergsonian concepts with emergence. Jan Bor (1990) poses, in a rigorous study of Bergson, the following question: 'Is it possible to experience reality directly, rather than through the medium of concepts?' (Bor 1990: 269). The Bergsonian idea of immediate experience presupposes irreversibility, indeterminacy, consciousness, memory, and perception. They are closely related and recursively connected. The important concept of duration or lived experience is contrasted to quantitative, mechanistic time. Duration pulls dynamic continuity, succession, multiplicity, and history, together (Bor 1990). Bor emphasises that Intuition is a *method* for reflexivity: 'The psychological duration is by its own nature forever incomplete (…) in other words, it is a *continuous emergence of novelty* and can never be conceived as a mere rearrangement of permanent preexisting units. It never barely is, it always *becomes*' (Capek quoted in Bor 1990: 39). Duration opposes the idea that reality is pre-given: 'In other words, the current state is new in relation to the preceding ones; and the future, that is what is happening later, is never enclosed in the present, in the sense that it is not entirely determined by it' (Bor

[42] Cues are described by Letiche & Lissack as follows: 'Part apprehension and part intuition, 'cues' are pre-conscious perceptions embedded in a background of experience that provide an indication or alert of an approaching emergent possibility. The meaning inherent in the cue is context dependent. Cues require narrative, description, and interaction. Cues are emergent affordances; that is, cues point to possibilities of order, relationship, action, and opportunity offered by the shared circumstance. Cues are in the world and cues are social. A cue-based ontology, suggests meaning is emergent, shared, and in-the-world. Cues are physical and mental, body and mind, other and self --- we perceive them on the boundary of the here and the there, the individual and the organizational. Cues evoke meaning in all sorts of strange ways. The difference between experienced emergent coherence and attributed labeled coherence is that the former is cued and the latter is encoded' (Letiche et al. 2011: 22-23).

1990: 39). The arrow of experienced time differentiates past (memory), present (consciousness) and future (indeterminacy) – i.e. the set of emergents (possibilities) are larger than the set of resultants. The TINA (there is no alternative) principle of attributed coherence (concepts/labels) is broken open by SARA (some alternatives remain always), arguing for experienced coherence: '*lived* time exists at the threshold of many potential futures (…). Bergson's universe is thus utterly infused with consciousness - because the universe *endures* – and consciousness, once admitted, perforce becomes the primary aspect of a universe that would otherwise simply run down the stairway of entropy. Consciousness acts to generate life, which runs up in the opposite direction, a gathering, ordering principle running counter to the determined collapse of the inert. Life, driven by the élan vital, the principle of ordering, is that universal consciousness, acting upon inert matter, becoming at last, through us, self-aware' (Kreps 2015: 212).

Kreps renames the Bergsonian ordering principle of élan vital *creative emergence*. The durational experience of the world, a consciousness of duration, and the mentioned self-awareness, or, better, the experiencing subject, is 'at the crest of the unfolding moment: it is *lived emergence*' (ibid.: 220). This notion of creative emergence rejects the deterministic universe of a realism in which laws of nature govern everything, 'which would imply that the future is in fact contained in the present and implicit in the past'. In short: 'the Idealism/Realism debate, for Bergson, ends in this: subjective idealism seeks to derive science from consciousness; materialistic realism seeks to derive consciousness from science' (ibid.: 39; Morin 1990). This means that the Cartesian divide between subject and object and Huxley's epiphenomenalism, expressed in the paradox 'I am aware that I have no awareness' falls apart (ibid.: 220). Morin confirms these notions: 'Emergences are neither epiphenomena, nor superstructures, but superior qualities that answer to complex organising (Morin 2001: 348-349). In chapter 2 and 3, the Tranchée narrative, the notion of 'lived emergence' came to life, showing that aggregation level (self/other; we/them) and strong contextualisation matter.

The need to cope with emergence (coherence) is what distinguishes living organisation and/or organising from deterministic organisation and/or organising. The willingness to cope with emergence is the greatest management challenge (Letiche et al. 2011: 17). Emergence refers to the non-linear, complex nature of the *becoming* of organisation and/or organising. Emergence arises from the interaction of order and disorder, which allows for organisation and/or organising (Morin 1977/1992). From disorder, emergence can lead to provisional order. This process of attributed and/or emergent sense-making, which, in relation to coherence, is the essence of organisation and/or organising, is described by Letiche & Lissack as follows: 'Making sense of the world, or of that portion, we encounter at any given moment, is complex. How we go about it, determines our openness and/or preparedness for the emergent. (…) When 'making sense,' we can

depend on pre-established categories for what we observe, and ascribe (assign) a label to what we see. Metaphorically speaking, we look-up in our codebook what rule or regulation applies, and try to stamp out any deviations from what we believe goes with the label assigned. Or we can look for stories that resonate with what we observe. As we seek stories, we engage in an emergent process of sense-making. In the first case, we seek to measure and eliminate deviance from the fixed label or category. In the second, we try to adjust to what we see unfolding before us. Both paths are ways of making sense or of finding coherence in a given situation and lead to using the coherence as the basis for further action. The first path we call ascribed or attributed coherence. (…) The second path we call emergent or experienced coherence' (Letiche et al. 2011: 12).

Action Perspective on Emergence

Stacey & Mowles look for action perspectives to cope with emergence. They endorse that emergence is intangible, unpredictable, and indeterminate. We can only try to know emergence indirectly. Coping with emergence in their view translates into the perspective of *complex responsive processes of relating*. They, in the context of their complex responsive process theory, describe the term 'emergent' as follows: "In other words, interaction is local, self-referential and self-organising, which is what we mean by the term 'emergent'. Humans are able to make meaningful the patterns which are emerging between them in the living present" (Stacey & Mowles 2016: 488-489). In the previous chapter, I problematised the complexity concept of self-organisation and concluded that most self-organisation concepts *do not* break with the notion that organisational processes determine self-organisation. The two-fold logic of the restricted notion of self-organisation confines emergence to its nonlinear deterministic interpretation in the natural sciences. Stacey & Mowles describe self-organisation as follows:

> 'We understand self-organisation to mean this local interaction where human beings are choosing and intending their next actions in response to the actions of others, and where their choices reflect their own local organising principles based on particular life histories based in a community with a history. The phrase self-organisation does not mean that people are just doing what they like, and nor are they simply following centrally determined rules. (…) People do act with intention, use blueprints and plans and design work processes, but these are gestures taken up in communicative interaction with each other. (…) There can be no plans or blueprints for the interaction itself, although some management scholars aspire to produce them, but tools and models emerge in the interaction between people. Interaction is always local, but patterns of meaning can arise across a wide population as people interact in many situations. (…) Experience is the

> direct interaction between feeling human bodies as they accomplish joint action, but is not participation in some abstract system which is separate from what they are doing. (…) The link we make to the complexity sciences is that we regard human interaction as nonlinear, which allows for the escalation of small differences caused by spontaneity and imperfect reproduction, the figuration of interaction, into the potential of wide spread qualitative changes in population-wide patterns of relating' (ibid.: 489).

Organisations entail complex responsive processes of relating. These processes include narrative themes, which organise experience. These themes are often paradoxical and have legitimate (formal labels), and shadow themes that challenge the labels. Complex responsive process theory emphasises: reflexivity as a methodology; dealing with contradiction and paradox without resolving them or bringing them to equilibrium by an outsider (manager). Organisational life is dialogic and conscious, it supports sagacity (Metis) and human intention (ibid.: 486-517; Stacey (eds.) 2005).

In sum:

> 'we are claiming that responsive process thinking offers a radically alternative understanding of organisational evolution in the following ways: it abandons the position of the autonomous individual who is an objective observer of what is going on in organisations without moving to the social pole and losing sight of the individuals. Rather it maintains the paradox of the society of individuals, where we are forming and being formed both at the same time. It replaces the split between individual and social by assuming the simultaneous construction of individual and group identity and the methodological position of reflexivity. Another move is from the leader as individual designer towards the notion that we are active participants in complex responsive processes of relating to other people in ways which are both good and bad' (ibid.: 496).

Stacey & Mowles acknowledge in these quotes Morin's dialogic complexity principle (interaction between self and context, thereby abandoning objectivism), but the recursivity principle (self produces context and is produced by context) is considered to be a paradox. Complex responsive process theory can be understood as a second-order systems theory (the observer is part of the observed), but ignores the holographic principle that connects local interaction and system, i.e. the parts are in the whole and the whole is in the parts.

The description of emergence in relation to self-organisation resonates with the non-linear deterministic 'butterfly effect': local nonlinear interaction arises across the system (population), *unintentionally* creating wholes (global patterns). In previous work, Stacey defines emergence as follows: 'Emergence is the production of global patterns of behavior by agents in a complex system interacting according to their own local rules

of behavior, without intending the global patterns of behavior that come about. In emergence, global patterns cannot be predicted from the local rules of behavior that produce them. To put it in another way, global patterns cannot be reduced to individual behavior' (Stacey 1996: 287; cf. Boje 2008: 37-38). I agree that the whole cannot be predicted from the parts, nor can the whole be reduced to the parts. I add that from this notion of emergence it follows that the reverse is not possible – i.e. that the parts cannot be predicted from the whole, nor can the parts be reduced to the whole. But the whole and the parts seem to be very loosely coupled here. Complex interactions can only take place locally, in other words, the whole does not speak back to the local parts. On the one hand, people construct blueprints and labels (ascribed coherence) in local dialogics (dialogic principle); but simultaneously, the whole seems to be separated from the local interactions. In this phrasing, it seems that Stacey & Mowles oppose systems theory to complexity theory. I agree with Midgley that this is confusing: 'I treat systems thinking and complexity as a pair because they share certain characteristics of particular relevance. I appreciate that some authors (e.g. Stacey et al. 2000) *contrast* complexity and systems thinking. However, while I accept the criticisms of *early* systems thinking offered by Stacey et al., I disagree with their characterization of some later systems theories which I suggest have a lot in common with philosophical writing in complexity (…)' (Midgley 2008: 55). It appears to me, that the holographic and the recursive complexity principles are ignored by Stacey & Mowles. Coping with complexity is largely centred on the dialogic complexity principle and on emergent coherence, pushing to the background the other side of the coherence coin: ascribed coherence. Emergence, in this reading, appears to be grounded in a two-fold logic of complex dualism centring on self and organisation (see chapter 5).

I will now start the climbing expedition towards the fourth floor, which I have provisionally added to Morin's complexity edifice, where I will explore emergence that connects order and disorder, and the paradigm of simplicity and the paradigm of complexity in an emergent way. Depending on the perspective and the contexts, complementary, contradictory, and opposing relations mark emergence. The consequence is that dualism or a dichotomy, that only shows an opposing, or complementary, or contradictory relationship between two factors or between pre-given labels, cannot explain emergence. One needs at least a trilemma, in which three factors can be researched with three complex relations in play, all at the same time. In the next section, I will elaborate on this insight, informed by the dialogic square of Self and World, of Letiche & Lissack. As we already saw in the Tranchée narrative, in the dialogic square analysis, different trilemmas enter in, flip-flopping between foreground and background, as the story evolves. Not pre-given or retrospectively attributed concepts or labels inspire the analyses, but narratives told about the real world.

Researching Social Complexity marked by Emergence?

In my quest for understanding emergence, we have now ended up on the fourth floor, which I provisionally have added to Morin's Complexity Edifice, a cluttered, emergent workplace under (de)construction (See figure 19). In chapter 4 (simplicity) we took the staircase towards the first floor, leaving behind the one-dimensional closed mechanistic worldview of one best way, which supports at most complicatedness and denies complexity. We came across open systems theory, which is two-dimensional - i.e. it is founded on dichotomy. Then we climbed, in chapter 5 (complexity), the next staircase, towards the second floor where we found nonlinear deterministic systems theory, based on self-organisation and chaos theory, and ended up on the third floor, with the three-dimensional trilemmas proposed by Morin, which converge on his three complexity principles. Emergence is not denied anymore, on the contrary; it is the leading factor. Now we are climbing an unstable stepladder towards the fourth floor, into the almost uncharted territory of a four-dimensional world, proposed by Letiche & Lissack. Emergence 'is' – i.e. emergence is a fundamental ontic and ontological complexity principle: 'Humanity cannot stand outside emergence and turn it on and off at will' (Letiche et al. 2011: 105). The key question that prevails on this floor: Can we further open the black box of emergence and find insights that provide us with possible action perspectives that might enable us to cope with emergence in a better way than the other floors allow us to? While remaining aware of the fact that understanding emergence will always mean trying to square the circle as there is no end-state to emergence.

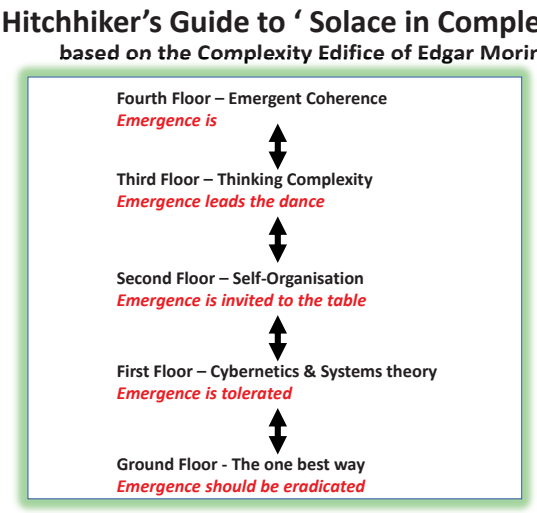


Figure 19

In this section, I will explore the dialogic square developed, based on case studies, by Letiche & Lissack. I will focus on two important concepts that relate to emergence: coherence and the dialogic square as a research framework that tries to improve our understanding of emergence. Finally, I will provide some provisional conclusions. In the next chapter, I will discuss the water case, which I will analyse with these concepts and the complexity principles of Morin.

The semiotic square of Self and World is my guide, in which four factors (labels) are constructed in a way that depends on the issue that is studied, being brought into dialogues through three different complex relationships: complementary, contradictory, and opposing. Letiche & Lissack call it a dialogic square. It's a way to 'map' complexity marked by emergence. The basic dialogic square of Self and World tries to make sense of emergent, situational occurrence. Thus, how do we make sense of it? And who are we? Using the dialogic square allows us to create complex narratives. One looks at a phenomenon, for instance, climate change, or Tranchée, from different perspectives and in different relationships. These perspectives produce many different complex narratives: 'in coherentist epistemology, the ability to tell what has happened is linked to the ability to tell how one has arrived at one's interpretation' (ibid.: 109). Ascribed coherence – i.e. applying the same labels repeatedly to emergents, cannot be based 'on knowledge that is emergent' (ibid.). One tries to show emergence *indirectly*. In other words, it matters what narratives you are faced with and in which context they are storied. For example, climate change can be framed as an environmental problem, or as an energy problem, or as a footprint problem, while each produces different, often contradictory, narratives and affordances. I showed the consequences of these differences in contextualisation, when I discussed framing climate change as a tamed or a wicked problem. Our *ability* to tell stories about Self, Group (society, organisation), Environment (world) and Emergence (change) matters. Let me give another example: Hugo rides a bicycle and gets a flat tyre (emergence). Now I add some context: on a free Saturday afternoon, Hugo cycles, cool, calm, and collected, to the market in the city where he lives, and gets a flat tyre. That's annoying, but not catastrophic. Now add another context: Hugo cycles in XYZ's cycling team, that competes in the 'Tour de France', races down the col Tourmalet at 90 kilometres per hour and gets a flat tyre in a bend beside a deep abyss. That could be deadly. The examples show the importance of contextualising and of reflexivity.

Generic models, which apply universal rules to a few labels, as we saw with the 2x2 matrix, can only see a first decontextualised level and perceive that in a homogeneous way. The question then is: how we can we 'map' complexity and thereby escape the reductionist simplification of two-fold logic? How can we improve our understanding of emergent multiplicity, seeking better coherence in situated knowledge-in-practice? In the following quote regarding these issues, Letiche & Lissack assert: 'At its heart, the semiotic square is a device for facilitating dialogues, query, and iterative understanding.

Within the set of interactions contained in the semiotic square (see figure 20), we can ask:

> 'How does *self* recognize *emergence?* How does *self* incorporate *emergence* into the possibility space of its next actions?' Self has identity, an 'I' attached to a me, and agency. Emergence has no truck with I/me; it inevitably threatens anything already defined with change, dynamism, and indeterminacy. Likewise, collective self or shared existence in a group is threatened by emergence (….) Human existence is embedded in society, its means of production and the concrete physical environment. In the pole of environment and emergence, human control is at least questionable, if not (often) weak. The key question is, what if anything holds all the diversity together? We answer complexity coheres if our narratives let it. Coherence depends on our ability to tell stories that describe self, group, world (circumstance) and change. We know or cognize the emergent when we find and share stories about it. Without the ability to describe what emerges, events and activity cannot produce coherence. Our ability to articulate what emerges connects us to the world. Emergent possibilities are meaningless unless we can make them into stories that we can share--- i.e. emergence has to enter into (individual and/or collective) consciousness if it is to be acted upon' (Letiche et al. 2011: 32-33).

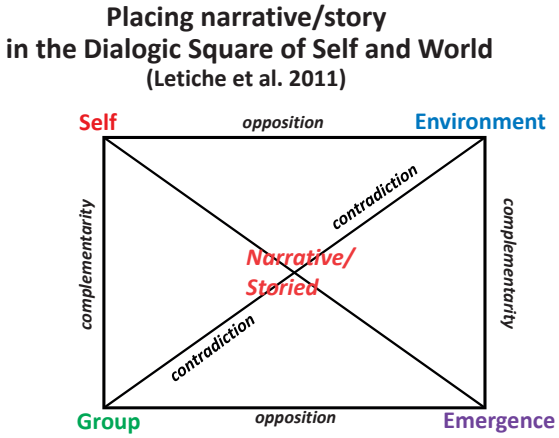


Figure 20

Letiche & Lissack emphasise experienced coherence that is shared through storying. The stories are a dialogue about the world with which self is confronted by other. The world is populated with different contexts: Others (group), environment and emergent occurrences. Coping with complexity is at the heart of the dialogic square – i.e. coping with a world that is indeterminate, ambiguous, changing, and thereby largely incoher-

ent. Our quest for coherence is a head with the two faces that show a rabbitduck-like interplay between foreground and background of opposing views of coherence. In the context of organisation and/or organizing, ascribed coherence or codification through pre-given or retrospective explicit labelling is in the foreground. The other face is emergent, experienced coherence which is implicit, and thereby indeterminate, begging for reflexivity and contextualisation as provided by the complexity principles of Morin and Letiche & Lissack. I have argued that a two-fold logic, informed by for example a 2x2 matrix and restricted notions of self-organisation, is inadequate to researching emergence (first and the second floor of Morin's complexity edifice). Letiche & Lissack specify this in the following quote: 'When the narrative is rich, relationship between 'self', 'group', 'environment' and 'emergence' is facilitated. Connectedness is experienced as coherent and is storied as such. The narrative – which needs authors, readers, literary conventions, organization, and culture – provides us with the ascribed coherence needed to talk about or to share an understanding of emergence. When the narrative is weak, and the common understanding is not well-articulated, we often end up with arbitrary, imposed definitions of coherence that do not resonate with circumstance or possibility. The hollowness of the resulting interactions often leads to failures in understanding, coordination and resolve' (ibid.: 34).

I wish now to interrupt my discussion of the dialogic square, to linger over some constitutive concepts that underpin it. I will start with the difference between ascribed or labelled coherence and experiential or emergent coherence, and how the difference relates to coping with emergence.

Emergent Coherence

Letiche & Lissack make a crucial distinction between ascribed coherence and emergent coherence. They describe coherence as follows: 'The pulling together of things, ideas and events into a unity and a sense of a whole. Coherence is about making sense and about how we make sense' (ibid.: 19). Ascribed coherence is one of the (hidden) pillars of most mainstream management literature, as discussed in chapter 4. The simplicity paradigm is founded on such concepts: one defines, a priori, a clear goal; one describes the management model in use; casts it in a chosen or constructed 2x2 Matrix; one specifies the label and the rules that should be followed in the implementation of the model; one retrospectively audits the output; then one feeds the output back to the input. And in the case of disruption, one runs the cycle once more, until everything runs smoothly, from the perspective of management and its stakeholders. The vicious management cycle described by Stacey (1996), based on first-order systems theory, explains also why

emergence should either be eradicated, as Taylorism prescribes and/or should be made a predictable entity. In other words, ascribed coherence denies the being of emergence.

Emergent Coherence or experienced coherence focuses on practice and gives a better description of everyday life in organisation and/or organising. With experienced coherence, you look at experiences, descriptions, and contexts. Experienced coherence takes emergence as its starting point. Complicatedness has a strong relationship with attributed coherence; complexity with experienced coherence. Ascribed coherence is associated with codification, emergent coherence with cues. When things and events are coherent, one perceives unity. Elements appear to have something in common. Usually, coherence is attributed to a situation afterwards. In the case of ascribed coherence events are made measurable and rules are added. This can be via a mental model. The same model can then be applied in a variety of situations. This leads to loss of context. Ascribed, measurable coherence assumes fixed contexts. It is frozen in the cold welds of the organisation. In other words, ascribed coherence, such as in models, in procedures and in protocols, assumes a stable context. Measurable factuality is objectified, labels are endlessly repeated, and there is little room for learning. Letiche & Lissack: 'These two kinds of coherence - a shared social process, and a retrospective ascriptive judgment – have different roles in our day-to-day lives. To identify something as coherent, after the fact is not always very helpful. It has little innovative value and does not assist much in the organizing process. (…). Experiential, emergent coherence, or events of shared understanding and practice, precedes labeling. For organizing, experiential, emergent coherence is much more important than retrospective sense-making. (…). Organizing is more about doing and making than about labeling and categorizing' (Letiche et al.: 45). Now, via an intermediate step, the Cynefin Framework, I will return to the dialogic square, focusing on its practical significance.

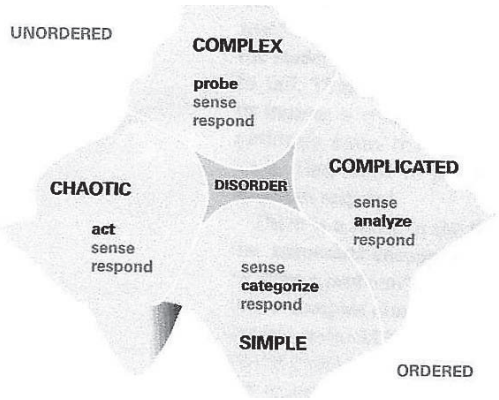
In Between the 2X2 Matrix and the Dialogic Square

A dialogic square is a different approach from the classic 2X2 matrix. The 2X2 matrix, as we saw in Chapter 4, shows ascribed coherence based on four labels, resulting from two axes, both caught in dualistic opposition (thesis <--> antithesis). It results in four quadrants with which reality supposedly can be described. Each quadrant is characterised by a set of prescribed actions. Such a 2x2 matrix, I argued, at best shows complicatedness and denies emergence. The Cynefin Framework, formulated by Snowden & Boone (2007), which is also a 2x2 matrix[43], approximates the dialogic

[43] David Snowden explicitly denies that the Cynefin Framework is a 2X2 Matrix in an interesting elaboration of the Framework on YouTube. See https://www.youtube.com/watch?v=N7oz366X0-8.

square. The Cynefin Framework is an attempt to show complexity and proposes tools for managing in a complex context. According to Letiche & Lissack: 'it does begin to address the conjunction between coherence and simplicity' (Letiche et al. 2011: 53-56). Snowden & Boone present us with a leader's guide to cope with context and prescribe how to act in various contexts.

The Cynefin Framework
Contextualisation



I will briefly discuss the Cynefin Framework (see figure Cynefin Framework). As I mentioned in chapter 4: 2x2 matrixes are to a large extent self-referencing. After all, one starts with the establishment of the quadrants, outside of which nothing seems to exist. In addition, a large degree of homogenisation (sameness) is assumed: within the quadrants, no diversity is to be found. It also is assumed that a leader/manager can change style according to the situation and that employees can be pushed in the chosen direction. Roles and behaviours supposedly are manipulable like a machine. Letiche & Lissack confirm the difference between the dialogic square as a reference frame and the 2x2 Matrix:

> 'Where ascribed coherence suggests labeling the quadrants, and categorizing actions based on those labels, the semiotic square focuses on the relationships amongst elements and promotes dialogue and querying amongst these relationships. The two by two matrix is a representation, which deals with the complicated – one unfolds the chart to focus on a particular surface. By contrast, the dialogic square is a compression, which deals with the complex. The interweaving's of the relationships illustrated amongst the elements of the square are represented only in the abstract – the very arrows and lines invite questions, stories, and probing. Where the two by two matrix is a tool of labelling and

characterization, we use the semiotic square as a formal tool to elicit the queries and dialogues characteristic of emergent coherence' (ibid.: 19).

On first sight, the Cynefin Framework seems an ordinary 2x2 matrix. But I think this is not entirely fair. There is more to the framework. Firstly, factors/labels, which mark 2x2 Matrixes, are replaced by contexts. By doing so, complexity is better respected. Secondly, the framework puts disorder at the heart of the model as a fifth context that connects the other four contexts of simple, chaotic, complicated, and complex. Snowden & Boone assert that 'the framework sorts the issues facing leaders into five contexts defined by the nature of the relationship between cause and effect. Four of these – simple, complicated, complex, and chaotic – require leaders to diagnose situations and to act in contextually appropriate ways. The fifth – disorder- applies when it is unclear which of the other four contexts is predominant' (Snowden et al. 2007: 2). On the one hand, the Cynefin Framework supports complexity concepts as nonlinearity of interactions, irreversibility of processes in time, emergence, and fundamental unpredictability. On the other hand, the framework, as I said above, suffers from the 2x2 matrix ailments I identified in chapter 4. Simple contexts are the domain of best practice and we find ourselves mostly in the realm of known knowns, where the tools of mainstream management can be applied. A few disclaimers should be considered, such as blindness for novelty, complacency, and over-simplification: 'best practice is, by definition, past practice' (ibid.: 3). Complicated contexts are the domain of experts. The realm of known unknowns is here paramount. Good practice replaces the idea of best practice- i.e. practice is situational. The experts can display in this context their analytical skills. A new disclaimer is introduced: 'analyses paralyses' prevents 'identifying small trends or weak signals' (ibid.:4). Emergence enters the scene in complex contexts, as we arrive in the realm of unknown unknowns: 'it is the domain to which much of contemporary business has shifted' (ibid.: 5). In this context, leaders need to drop the tools that are prescribed by mainstream management textbooks. In a chaotic context, or the realm of the unknowables, anything goes; one should act and hope for the best.

The Cynefin Framework leaves me with the feeling of being stuck in the middle. Snowden & Boone confirm an important shift towards complexity but seem to suggest that leaders and their experts should monitor in which context the organisation and organising is operating, and then apply the indicated behaviours. Leadership and experts are placed outside of the situatedness, and this suggests that the observer is disconnected from the observed. I don't so much have a problem with the prescriptions as such, but it is unclear how we can know in which of the four possible contexts we are situated, and most of the named contexts are predominated by ascribed labelled coherence. The discourse caters to the paradigm of simplicity, which accepts simple and complicated contexts, but has little attention for complex or chaotic ones. Another problem that arises

from the framework is that it seems to suggest that contexts that are free of emergence can exist as (simple & complicated). This flirts with the idea that complex issues can be domesticated into complicated or simple solutions. In sum, I question whether the Cynefin Framework can overcome the dominant management perspective of ascribed coherence and the analytical approach of the vicious circle that it brings about. Acknowledging emergent coherence is one thing, but experiencing emergence and bringing understanding that arises from it into the world of ascribed coherence, is something else.

This brings me to how emergent coherence can be brought into dialogues with the labels of ascribed coherence. I will return to the dialogic square, which claims to try to understand emergence better, and asserts that complex dialogues between experienced coherence and the labels of ascribed coherence is essential to coping with emergence. In the wording of Letiche & Lissack: 'Purposeful activity only results when we can transform emergent coherence into ascribed coherence. Only when the emergent is translated into the ascribed can it be applied, operationalized, and replicated within an organization. Thus, rather ironically, we have to repress emergence in order to make intentional use of it. (…) If we want purposive managing or leadership, we will have to move from the emergent, through the self, to attribution. But if there is no experienced coherence, the attributions will all ring false, be ineffective, and (eventually) fail (ibid.: 34). In other words, ascribed coherence can lead, through its repetition of sameness and denial of emergence, to a form of collective insanity; but the same applies to emergent coherence if it is not captured through dialogues, reflexivity, and ongoing contextualisation. Uncritically collective fantasies and self-delusion can take over: 'Emergent coherence can be false (…). Coherence cohering around delusional fantasies can be supported by very strong networks of affordances, events, and meanings' (ibid.: 198).

One could understand the above quote as follows: self must transform emergent coherence into ascribed coherence. This could be interpreted that self must squeeze the emergent into the moulds or templates of the ascribed labels. This could be conceived of as a contradiction in terms. Emergence refers to novelty that is described in dialogic processes, which transform into new forms of ascription (labelling). These forms are highly dependent on contextualisation and reflexivity; thus, I propose that we should name this process shared or *dialogic* ascribed coherence – i.e. dialogic ascribed coherence is continuously in processes of formation to enable and absorb the ongoing dialogic flow of emergent coherence.

What could be the significance of the dialogic square as a guide towards a better, to be sure indirect, understanding of emergence; how can the dialogic square aid in the inscription of emergent coherence in ascribed coherence?

Significance of the Dialogic Square

I return to the dialogic square, to disentangle how it might assist in understanding emergence better. The dialogic square is not a 2x2 matrix, it tries to resist reduction and acknowledges the impossibility of showing complexity in a 2x2 matrix. The Cynefin Framework takes an in-between position, it stresses the importance of four possible contexts and their indeterminacy, through a fifth context, of disorder. But it does not explain how we are able to know in which context we find ourselves. In the phrasing of Letiche & Lissack: 'Where the managerial perspective attempts to restrict attention to the known, knowable, or probabilistic, the Cynefin perspective points us toward emergent coherence. It recognizes that there are domains where actions occur and then sense-making follows. It observes that the lesson of such domains is for leaders/managers to attempt to influence or channel the cascade of actions, which follow, but it provides little guidance as to how' (ibid.: 56).

The dialogic square tries to reveal emergent processes by providing a guide for active dialogues that respects the lived or experienced narrative – i.e. it puts lived speech (parole) in the foreground. The dialogic square of Self-Group-Environment-Emergence adds a fourth factor to Morin's trilemmas, and thus further destabilises them. The trilemma Self-Group-Environment seems to *exclude Emergence*. The trilemma Self-Group-Emergence seems to *exclude, the Environment*. The trilemma Self-Environment-Emergence seems to *exclude, the Group*. The trilemma Environment-Group-Emergence seems to *exclude, the Self*. The apparent exclusion or inclusion refers to the 'absence in presence' and 'presence in absence', which I discussed, informed by the rabbitduck (see chapter 5). The move to add the factor emergence complexifies the trilemma; while the trilemmas have complexified the dualism of thesis-antithesis: 'Four-point logic is inherently complex and in our experience most often dynamic or unstable. Instead of the monolithic label, modernist either/or (capital/labor, motivated/ennui, male/female, black/white), or (neo-)Hegelian triad (thesis > antithesis > synthesis; situation > problem > solution, status quo > unfreeze > refreeze), we choose for a much more open structure of understanding. Four-fold logic is characterized by opening the possibility of examining relationships in multiple orders' (ibid.: 245).

The dialogic square walks a fine line, with a collapse of sense-making lying in wait. The dialogic square tries to voice the relatedness between self-group-environment-emergence. The square allows several trilemmas in the ongoing dialogues between participants – i.e. the dialogic square 'entails using the square as a guide to active dialogues. (…) By having the square to refer to, the participants have some sense of boundary, some positioning of figure and ground, and a reminder that no one aspect should be emphasized at the expense of ignoring others' (ibid.: 247).

The three-fold logic of the trilemmas of Morin, as well as the fourfold logic of the dialogic square, assume that the factors they reveal, differ; in other words that they are irreducible to each other. These logics introduce three types of complex relations between the factors, and emphasise the relatedness of these factors – neither the factors nor the relations, should be observed in isolation, sweeping away emergence. A third similarity between these logics indicates that differences in aggregation level matter (for example between Self and Group). The three-fold relationships are not absolute, but gradual. The complementary relationship between Self and Group can be strong, when we experience shared values, a sense of direction and creative collaboration; but it can also be weak when frustration, isolation, and the violence of 'group think' silences emergence. Contradictions are felt when factors are alienated from each other and have become strangers to each other. Group and Emergence are strong opposites, organisation has almost no possibility to experience emergence; the labels that define coherence, largely block this possibility. As I mentioned before, the challenge of organisation and/or organising is whether to leave room for exchange between the labels of ascribed coherence and the narratives of experienced coherence.

The dialogic square emphasises via ongoing dialogues on emergence, self, group, and opportunities (affordances) that the environment can provide for action. Experienced coherence (Self) can be transformed into ascribed, shared coherence (Group/Organisation). In other words, experienced coherence, which is personal and individual copes much better with emergence than does groups (organisations) that need to reintroduce their understandings into the collective through shared dialogues. Organisations are mostly unable to notice emergence; individuals do but they must be heard, which means that the collective must take an interest in the polyphony of individual voices. After all, if emergent possibilities (affordances) are not be shared through stories, they remain largely meaningless. The practitioner is someone who in principle can see new, adjacent affordances in the environment under emergent conditions; but this tacit dimension must be shared with the group so that it comes out of the shadows. The experienced coherence of affordances often challenges the official, legitimated themes of ascribed coherence: 'Conversations in the shadow are a form of play. It is in the complex interplay of legitimate and shadow themes that ordinary, everyday conversations create the narratives of experience. (…) The problem with studying the hidden transcripts is that they are usually clandestine and so closed to outsiders. However, they are frequently expressed more publicly in disguised form as rumours, gossip, folktales, and jokes' (Stacey & Mowles 2016: 426).

I assume that the dialogic square enables the interplay of dialogues between the shadow and the legitimate themes represented by the labels of ascribed coherence. However, if emergent coherence and ascribed coherence are not, to some degree, shared; the possibility of creating new labels becomes problematic. Narrativity is about connecting

action to intent. Narrativity or storytelling has little to do with just talking *about* Self, Group, Environment, and Emergence. It is socially much more active than that. In this sense, the dialogic square tries to connect intent and action as much as possible - i.e. to achieve speech acts. This means that the four factors and their relations need to be included in the narratives: 'Nearly all the organizational researchers of the narrative turn are interested in stories and not in lived or experienced narrative. That the organization hangs together from speech and speech acts, seems fairly clear. We suggest there are far fewer stories than the researchers would have you believe. There are text fragments or terse stories, but story-telling is infrequent. Speech is interactive --- filled-in by the one and then the other. Most of the time, speech has to do with talking to one another and not with story-telling. An organization characterized by a series of monological story-tellings would, we believe, be rather ineffective. In any event, emergence is not served by such "story-telling"; it requires the more complex narratives of partiality, polyphony, and dissensus' (Letiche et al. 2011: 231).

In the above quote, an important distinction is made between stories and *lived or experienced* narrative in relation to emergence. I discussed the distinction between story-telling and narrative, informed by David Boje, in chapter 1 (Method). Boje's view on story-telling evokes dialogues about lived complex narratives, while narrative points to constructed, framed, and plotted story-telling. Boje has constructed a trilemma of Collective Storytelling Dynamics, which emphasises complex lived or experienced, narratives of emergence. In the wording of Boje: 'Collective Storytelling Dynamics (CSD) is the interplay of antenarratives, linear narratives, and living story networking. CSD applies this complexity to three interdependent storytelling genres: narrative retrospective sense-making, living story networks unfolding in the present, and antenarratives prospective sense-making into the future. CSD is all about patterns of complexity of storytelling sense-making (Boje 2011: 12; Boje 2008, introduction).

Lived *speech* is about our daily conversations and other forms of terse interchanges (e-mail; text messages, etcetera). Lived daily speech should not be confused with complex narratives that story self, group, environment, and emergence, nor with structured and constructed story-telling with a clear objective, plot, and framing - i.e. narratives that story the organisational ideology and power relations that enhance the dominant management view in use (telling is selling). These different wordings of story and narrative are not merely semantic but point to an epistemic difference. In relation to the dialogic square, both Letiche & Lissack and Boje emphasise complex lived and experienced narrative that underpins the dialogic complexity principles of Morin.

It is obvious that the dialogic square does not escape compression and reduction. But this does not mean that the different interpretations of experienced coherence and emergence are being reduced to labels. Dialogue is also about the unknown and the

unknowable. To recapitulate the significance of the dialogic square in the wording of Letiche & Lissack:

> 'Our use of the dialogue square as a guide risks allowing a traditional MBA mindset of categories to co-opt the tool. Thus, it must be emphasized that the mere labeling of the four factors is only heuristic, which is unto itself insufficient. The four-dimensionality of analysis is only achieved when the variety of perspectives are brought into discussion and deliberation with one another. The relationships are the key, not the labels. If we were interested in categories, then the application of the labels to the four points on the square, would be the bulk of the work. Once the categories were established, and the situation was mapped into the appropriate quadrants, "best practices" could allow managers to 'see' what has to be done. Dialogue is vastly different. With dialogue, the identification of the four factors is only the identification of the perspectives that need to be engaged with each other. The simple mapping of the situation to a category is excluded; by definition, every situation involves all of the perspectives. Where thinking in categories allows the "problem" to be reduced, by means of a label; dialogue demands that the problem is critically examined so that any solution includes consideration of multiple perspectives' (ibid.: 247-248).

A four-fold logic to study complexity marked by emergence, enabled by using the dialogic square, opposes the two-fold logic of a 2x2 matrix. Binary logic reduces dialogue between multiple perspectives (factors) and the interplay between three *complex relations* to pre-given and/or retrospective constructed labeled factors that are marked by one relation – i.e. opposition. The dialogic square respects Morin's three-fold logic (trilemma) of his complexity principles – i.e. the dialogic principles of interaction between order and disorder; recursive causality; and holographic structure.

Concluding Remarks

We have encountered the three levels of Morin's Complexity Edifice. The ground floor, which views emergence as an at the most superficial phenomenon that should be eradicated, has become a distant reminiscence. Although the view of the 'one best way' resonates in the concept of ascribed coherence. In my climbing to higher levels, I have met with complexity concepts that try to enhance understanding of the constitutive force of emergence. I call to memory the dialogic square employed to study Tranchée, where I experimented with fleshing out the abstractions of the basic dialogic square of Self and World. I filled in the basic dialogic square with four factors, which I constructed from the ethnographic data (see figure 21).

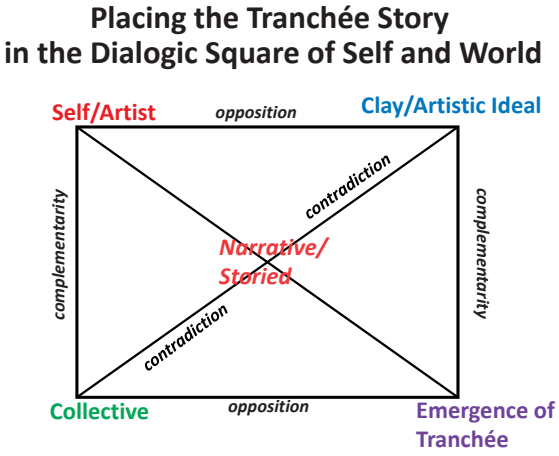


Figure 21

The Tranchée dialogic square shows emergence as close to circumstances as possible, in a microhistory, which focusses on 'identifying incoherence, discontinuity, contradictions and ruptures in everyday life' (Boje 2001: 45). The 'everyday life' in the case was the few weeks of the making of a work of art. The dialogic square helped me to deconstruct what happened and to show the constitutive force of emergence (disorder), as well as some of the miracles and nasty surprises of the emergent processes. The story, studied from the perspective of the artist, is an iterative monologue, which is sparsely commented on by the participants. I focused on the trilemma composed of the three factors **Self-Collective-Emergence (of Tranchée)** and the interaction of these factors through the complex relations of complementary-contradictory-opposite. These factors and relations showed different realities, simultaneously. On the one hand, they showed gaps, and on the other hand, the sometimes coming together of intention/concept and action; and indeterminacy and novelty presented themselves as well in the practical reality of creating Tranchée. Indeterminacy is different from case to case and therefore cannot be captured in a protocol or a model that simply describes some sort of idealised practice. In the deconstruction of the Tranchée story, other trilemmas were visible: for example, the trilemma **Collective-Artistic ideals/Clay-Emergence (of Tranchée)**. The monologue of the Tranchée story showed emergence, but the portrayed dialogues were narrated from one perspective, that of the artist. The dialogic square of Self and World comes into a more active form when used *in* an organisation and/or adhering to an organising issue; trying to show iterative dialogues from many perspectives; 'Iterative dialogue produces a form of simulacra. By conversing amongst the quadrants and amongst their interrelations, one can make predictions, reflect on altered situations or contexts, look for additional affordances, and thus try to reshape the adjacent possibles.

Rules, labels, and categories do not give "room" for such explorative dialogue. When best practices are applied, far too often they are treated as rules and categories, rather than as the situated simulacra that they really are' (Letiche et al. 2011: 249).

In the next chapter, I will present a meso-history, which I researched in the Dutch water management world, to further investigate the possibilities of the dialogic square to create awareness of emergence.

Third Part

Thinking Complex Water Management

The various interests at play in the background of geotechnical research, implicate a multitude of outcomes and discussions about the safety of dikes. (...) And the production of knowledge about failure mechanisms such as piping[44] is not only subjected to scientific ideas about relevant knowledge, but also to social-political notions of relevance (...) and then it becomes clear that the different approaches of dike failure mechanisms produce various forms of uncertainty. (...) However, this means that uncertainty should be seen as a possible source of information, and must not only be dismissed as being a so-called lack of knowledge or an abject by-product of (among other things) scientific research. Uncertainty also implies a tension between resilience (defined here in the more narrow sense of robustness) and adaptive capacity. Only technological cultures pursuing adaptive capacity can do full justice to the potential valuable aspects of uncertainty.

Matthijs Kouw (2012: 245).

On the one hand, organising water management is based on information, which I extract from all kinds of policy notes, or design and policy guidelines. On the other hand, I act based on my common sense, creativity, and experiential knowledge. I often joke with colleagues about the game Aqua Play; toys with dams and locks, and stuff like that. My field of activity takes place in the polders with ditches, locks, and dams, that resembles Aqua Play on a big scale. What happens to the water system, when you open or close a lock, is a connecting thread in my work. I am a natural at Aqua Play, and putting that knowledge into practice, might ward off complaints and disasters. It is not only a question of a couple of small dams, but also very complex huge projects.

Water Professional (Cath et al. 2011: 37).

[44] Piping is a form of seepage erosion involving the movement of water under or through a dike that provokes instability, in some cases leading to dike breaches (Kouw 2012: 112).

Water Stories

In this part of the book, the research I have done in the world of water management over the past ten years comes into the foreground. Every time I turn on the tap in my apartment in Amsterdam, clear, drinkable water flows out. The Netherlands is a man-made prosthesis, of which, over the past centuries, every square meter of land has been organised. Water management holds a prominent place, but because of its success, the public also takes it for granted. For most inhabitants of the Netherlands, water management is thought of as something that is fully comprehended, that does not raise questions and is only occasionally disturbed brutally when the *water wolves*[45] strike back (Van Dale 1999: 3920). My research on the complex management of water started with a simple question, provoked by sudden amazement about the water tap ritual: who organises the water management? And what does it mean? And how can it be that water management, which is crucial for the safety of the country, takes place seemingly unnoticed? Soon, I discovered that Dutch water management has an ancient tradition of gradually taming the 'water wolves' by trial and error. Soon after I started my research, it dawned on me that water management is not merely a complicated, but also a complex issue. It not only demands the attention of professionals, managers, and political governance but is also a scene of contention between stakeholders and a place for a struggle for resources and attention. In addition, over time, quantitative, hydrological water management has been complexified with questions about landscape quality, ecology, spatial scarcity issues, urban and countryside differences, organisational upscaling, and a lot more. Researching water management, one factor seemed to hold a prominent place: knowledge, knowing and sagacity. Because of this, I have focused my research on knowledge and concentrated on the role and position of emergent experiential knowledge as opposed to labeled ascribed knowledge when organising (water) under complex conditions. The following story, written by a seasoned water professional of a waterboard, was sent to me. This account followed an interview with him about the water world, in which the social complexity of water management was discussed. The story resonates and announces many of the issues that will be elaborated in the next chapter.

[45] Water wolf: the ever-threatening danger of flooding and dike breaks: *the land they always had to protect against the water wolf* (Kalff).

New Year's Day 1994

"New Year's Eve 1993. I was exhausted and glad to be at home. Fortunately, all the shopping had been done and I could rest for a little while before the guests would arrive for the celebration of the beginning of a new year. The days before, including that afternoon, we had been patrolling along the dikes and embankments with an army of water board employees. On Boxing Day, a couple of bubbling puddles had been discovered in an area inside the dikes. The water seeped through below the embankments and the dike, and it had started to rise. So, we began to busy ourselves with sandbags to prevent the embankment from becoming so undermined that it could fail. After nearly five full days we had reached the point where permanent monitoring was no longer necessary. Everyone deserved a New Year's Eve at home. Despite a couple of hours sleep that afternoon, I was happy when our guests left at half-past two that night. Still tired, I went to sleep. Because of the fatigue, I hadn't drunk any alcohol. At half-past five in the morning the phone rang. One of those with a landline. At the time we didn't yet have mobile phones. We did have a mobile phone in the car, but its range wasn't very large. Police! Half asleep, I heard a male officer say something about water. It took me a minute to clear my head. By way of the answering machine of the water board, they had been redirected to me, as I was on duty. It appeared that an embankment had failed. While I hurried into my clothes, it flashed through my mind that I had to make a phone call. I called the head of the technical department, who sounded at least as sleepy as I was. The message was serious enough to wake him up quickly. I agreed with him that after inspection on the spot, I would report to him on the situation. Meanwhile, he would inform the president and the director of the waterboard, and ensure that someone would man the central station of the radiophone at the office. I then called the regional manager and got him out of bed. Without him, I wouldn't be able to do much in the field. I told him to jump in his car and drive to town. I would get in touch with him through the radiophone and direct him further. By that time, he would hopefully have come enough to his senses. Without further delay, I jumped into the car and drove at high speed down the street. Six and a half minutes had passed since the first call from the police. With one eye on the road, I turned on the radiophone, which crackled to life. I flung the name of the regional manager into the ether at high volume. It was not until three kilometers before getting to town that he reported. Still sleepy, but conscious, he knew where to go. He arrived there ten minutes later.

In front of me, a rotating lamp loomed up. Moments later, I saw the arm and then the rest of the policeman who was attached to it. I parked the car on the side of the road, and via the radiophone, I checked once more on the arrival of the regional manager. That was confirmed. Once out of the car, contact would no longer be possible. I got out and shook the hand of the police officer. Richard was a level-headed man.

He pointed into the field. Somewhere in the darkness, the embankment had burst. A hundred meters away from where we were standing, he estimated. I knew the area like the back of my hand and had images in my head of what it would look like. 'Residents?', I inquired. 'Two farms', Richard said, 'we have just stopped by.' The inconvenience would be limited. Before the water would reach the farms, it would have spread so much that, at most, a thin layer would flow into the courtyard. The silo pit was most in danger. I walked to the car and grabbed the watercourse map. Back with Richard, his colleague just arrived with the occupant of the first farm. After a short greeting, all four of us bent over the map. I pointed to the location of the breach, and then to the B-waterway that began a little further on. 'It will flow to here. We need to wake up the caretaker of the camping site downstream. With a little bit of bad luck, it will be flooded because it lies quite low.' Richard's colleague got into the police car and drove to the campsite. Richard, the farmer, and I walked through the field towards the embankment. 'To the left', I pointed onto the dirt road, which lies higher. By way of the dirt road, we reached the embankment, where we saw the water already swirling by on the wrong side of it. We walked along the embankment towards the breach. After two hundred meters, we got there. Before us, a large hole yawned, where the water came swirling through. 'Come, we have seen enough,' I said after a minute or so and strode quickly back to the road.

The car of the regional manager came to a halt just when I stepped back onto the road. We spoke briefly with each other and I told him that we needed a large crawler crane. The regional manager knew a contractor who had one available nearby. Through the radiophone, I checked if there was someone at the office. A crackling answer came. The director in person was behind the device at the office. 'We need a contractor with a large crawler crane.' I gave him the name of the contractor and asked him to report back to me or the regional manager. Imagine the director calling a contractor. I wouldn't have put it past him to inquire about the price first. And I could only hope that there would be no discussion about the type of crane. What does a director know about this type of equipment? He hardly knew how to operate the radiophone. A figure loomed up out of nowhere. The occupant of the bungalow on the other side of the road. Outside the danger zone, but awakened by all the unusual activity. Healthy curiosity that came in handy for me. I checked the radiophone and got hold of the director again. 'Did you reach the contractor? Over.' He was on his way to the workshop. I asked the neighbor if I could phone at his place and looked up the number of the workshop in the book that was lying next to the phone. It was quiet in the kitchen of the bungalow, only a coffee machine was making a bubbling sound in the corner. Better a good neighbor than a distant director, I thought. Within half an hour after the last phone call, we had staff and equipment on site. I checked the radiophone again and spoke to a second regional manager via the central control room. The director had called him to ask him to take over. He himself was now on his way to the town hall with the president. 'What

are they going to do there?', I asked. 'No idea, but the mayor is also there.' At the town hall, the extension numbers were completely unknown and the telephone control room unmanned. Richard's colleague came back from the campsite, where the staff of the contractor had started the construction of a small embankment. He suggested to visit the town hall in XY. Somehow various people from the neighborhood had already understood that something was wrong. About thirty people had gathered around the hole in the embankment. The regional manager had arranged sandbags and shovels, and the whole team began filling sandbags and passing them on in a chain, but this soon proved to be ineffective. Meanwhile, the contractor had unloaded the large crawler crane, which had arrived on a flatbed trailer, and headed, through the field parallel to the dirt road, for the hole in the embankment.

I walked back to my car to check the radiophone again. Just when I heard that there was nothing new to report, Richard's colleague pulled up. 'I think it would be wise that you come with me to the town hall. Something is not right over there', he said dryly. With the support of the whole team, the regional manager and the contractor would be able to cope by themselves. I started my car and followed the police officer to the town hall. Within a few minutes, we entered the courtyard of the town hall. It turned out that the president and the director of the water board, along with the mayor, were in the boardroom of the town hall. I ran upstairs over the worn steps of the medieval building. The men were busy talking and looked up, somewhat disturbed, when I came in. 'Good morning, gentlemen', I said. 'Good morning, good that you are here', said the president. 'We are busy with the communication plan for the neighborhood.' A map lies on the table. A contour map! And a dated one at that. Apparently, the gentlemen had been studying this map. With a pencil, an area was marked, which was expected to be flooded. 'We have arranged a sound truck to warn the residents. In twenty minutes they will be on the spot.' If even a police officer had realised that there was something going wrong here, then why not these gentlemen? 'I think the residents already are warned', I said cautiously. You had to be careful not to injure the gentlemen's honor. 'There are only two farms and a campsite.' The president looked at the mayor, and then at me again: 'We think there are quite a few more. Based on the height values, we have determined the area where the water will come.' 'Height values?', I asked. 'Yes, indeed', said the president, 'we have contour maps in the archive. We know the water levels in the area, so we know where the water will flow.' He looked proud. 'Have you thought of the watercourse map?', I asked. This question led to some confusion and resentment. 'Why? It is important to determine the extent of the area first!' 'On the contour map, watercourses are not marked', I explained. 'However, the watercourses are lower than ground level, and water flows along the lowest possible route'. I took the map out of my pocket and put it over the other map on the table. I pointed out the location of the breach, and the route along which the water would flow. 'It seems a lot of water,' I

said, 'but when it spreads, it will only be a thin layer. In practice, it is not too bad. The most important is, that the hole in the embankment is plugged.' *One could sense some disappointment among the brass in the town hall. No sound trucks, no grand press conference, no television, no glory.* I suggested to get in the car and to go and have a look at the site.

When we arrived on site fifteen minutes later, the contractor had already partly plugged the hole. 'This is it?', said the director. The large crawler crane, which stood in the water to the top of its caterpillars, scooped a container of sand out of the field and maneuvered it into the hole in the embankment. More than half of the sand washed away immediately. It would take quite some time before the hole would be completely sealed. The crane drove forward, and with a dangerous movement dived into the depth. With a presence of mind, the driver managed to put the scoop of the crane down on the ground and push the crane back into the field. Still dangerous enough; the crane had almost disappeared in the B waterway that ran parallel to the embankment. 'A lot deeper than ground level after all', I said to the director. I was pleased when the head of technical service appeared. It was almost seven o'clock, just two and a half hours after the first phone call that woke me up. I wished everyone a happy New Year and drove home."

This story shows a field of tension and mutual incomprehension, between the cluster political governance (the president of the waterboard and the mayor), the waterboard management and the frontline workers (practice). It shows how different organisation and/or organising clusters in water management have grown apart, each following their own professional logic and discourse. It shows a growing gap between ascribed or labeled coherence, and experiential or emergent coherence – i.e. the confusion of tongues between the different professional clusters that in the past were more interwoven. The process of separation of drawing board (ascribed coherence) and kitchen table (emergent coherence) has been enhanced through a historical process of accumulation of interdisciplinary knowledge and knowing, scaling up of waterboards, spatial planning and increased organisational complicatedness (managerialism). The complexifying process eventually has lead to the different clusters becoming increasingly inward-looking, finding shelter in their own circles. I will try to unravel and elaborate these issues, concisely 'coping with complexity', in the next chapter, by means of the coherence conceptualisation and the dialogic square of Letiche & Lissack and the complexity principles of Morin, as discussed in the previous chapters.

Chapter 7

Contextualising Dutch Water Management

Every time we drink a glass of water, it would do us the world of good to realise that all the waters of the world resonate in that small glass. Against the rim of the glass, groundwater, river water and seawater resonate. And not only water resonates in the glass, but also nature, the elements and molecules, power and the struggle for power, capital and capitalism, microbes and algae, the sailors and the whales. In any glass of water, a storm of events is concealed. Each glass of water, is, however, familiar though it may seem a world of swirl and turbulence.

René ten Bos (2014: 299).

In a country that owes its origins to dikes, they are also poetry, and one gives them names like Waker, Dreamer, and Sleeper. (...) The landscape was created by the physical effort of people who have been engaged with shovels and wheelbarrows to keep the water out and uncover the land underneath. I realise once again, that the Netherlands is not an established fact, it is a decision. The dike is the embodiment of that: a stronghold of tradition and birthplace of innovation.

Tracy Metz (2014: 42).

A lack of coherence between the views of managers and employees concerning learning and organising, impedes the maturation of learning practices in organisations. (…) An organisation is seriously ill when managers are responsive to the stories in management books, and not responsive to the stories of their employees.

Ton Bruining (2005: Proposition 4 & 6).

Water Wolves

In the opening quote, René ten Bos describes the holographic principle of Morin with rigour: the whole world resonates in one glass of water. The second quote, by Tracy Metz, confirms the 'ecology of action' principle of Morin: an intention is contextualised in time and thus an irreversible emergent process is created. The third quote, by Ton Bruining, confirms the recursive dialogic principle that should take place between ascribed coherence (management books) and stories of people of flesh and blood (emergent coherence). In this chapter, I will try to review the complexity principles by Morin, Letiche & Lissack, and the analytical framework of the dialogic square of Self and World, in the context of my research in the Dutch water world. In the two opening sections, I will contextualise Dutch water management as an ongoing, irreversible historic process towards complexification, and the miracles and nasty surprises that this process brings with it. Subsequently, I will unveil the mentioned research project. Then, I will repeat the dialogic square analyses, which we have seen in chapter 3 (Tranchée), describing the different trilemmas and their emergent interplay, which can be inferred from my water management research data.

The history of water management in the Netherlands is a complex story with recurring heroism, courage, and intelligence; a united struggle against the various 'water wolves'. It is a story of resignation, muddling on, chastisement, and ongoing conflict and discord, whereby the diverse desires of the users often prove to be irreconcilable. A story in which, repeatedly, original innovators have emerged as the water literally was up to their necks, innovators who, through trial and error, delivered masterly feats (Rooijendijk 2009, 2011). The first serious opposition against the water wolves arose more than eight hundred years ago. At that time the water wolves were lord and master over the fate of the inhabitants of the Low Countries. They wreaked havoc without restraint, both from the sea as from the rivers. The following account serves as an overture: 'On Wednesday, September 29th, 1014, six days after the new moon, an abbot wrote, the briny deep rose to the clouds, and smashed onto the land of Walcheren and Flanders with thundering violence. Villages disappeared into the sea and thousands of people drowned. In 1042 it happened again, on November 3rd, when a terrible storm erupted, and roaring waves crashed onto the land of Zeeland. On Thursday, October 4th, 1134, twelve days after the new moon, as spring tide was approaching, the sea again pushed a sky-high tidal wave towards Zeeland and swallowed land, castles, houses, and people. Both the Bevelanden disappeared under water, as well as a large part of Walcheren and the Flemish coast. An unknown number of people drowned. On February 18th, 1164, again a storm raged over the Low Countries, which caused the St. Juliana Flood. A pastor described a sky full of thunder and lightning, it felt like hell. Eleven thousand

people drowned. Six years later, on All Saints' Day, the sea swelled again, pounded the coast, and forced itself in. The day after the All Saints' flood, people from Utrecht caught cod and whiting in the streets of their city and discovered what tides are like. Holland, Zeeland, and Friesland were flooded. A whole forest disappeared into the sea along the coast of Texel. Ships could no longer anchor because their fishing nets got caught in the tree stumps. It soon turned out that a lot more than a forest was concerned. Texel had become an island, and not only Texel. (...) The waves had broken up the northern coast of the Wadden Islands, and then of Friesland in the western and eastern parts, after which the water pushed into Almere and deeply eroded the edges. A large sea was formed, which was called the Zuiderzee. A hundred thousand Frisians drowned. Zeeland was splintered into many small islands, becoming an archipelago, surrounded by deep gullies. Gone was the uninterrupted coastline, which had protected the Low Countries until then' (ibid.: 27-29).

The above account shows that the water wolves were lord and master in the Low Countries. The inhabitants of this delta were at a crossroads: either they had to passively accept being the toy of the divine natural elements, or take control of matters and counteract. Finally, the scales tipped to the latter and the fight against the water was on, a fight, which continues to this day. But increasingly, one realises that one should also live with water, instead of just fighting it. And then dike-, dam and lock builders appeared, the likes of Willem van Saeftinghe (late 13th century) and later Andries Vierlingh (1507-1579). Vierlingh can be placed in the context of the emerging humanism of the Renaissance. Erasmus greatly influenced him: 'God has given man resources, Vierlingh said. For example, brushwood and turf, stones, earth, and straw. We should use them sensibly. We should build strong dikes, and make good dams and sluices with them. And if those structures would then succumb during a tidal flood, it wouldn't be God's punishment, but the fault of incompetent men' (ibid.: 71). After decades of acquiring knowledge and experience as a dike reeve, in his old age, Vierlingh addressed this theme of human ignorance, incompetence, and machinations, in a series of books. These writings read like a hermeneutics and heuristics of decent water management. Texts brimming with indications to how a dignified and decent dike reeve should behave. Besides the technique of water management, it especially describes the ethics of sound water management, averse as he was of the idea of metaphysical intervention by the gods.

Above all, it is about human work and hydrology. Vierlingh describes how these ideals stood in stark contrast to the harsh practical reality. Revealing descriptions of stealing and fighting, and feckless dike workers, follow. Things were not much better with the contractors. Trickery and deceit, tampering with materials and tools, delivery of defective work, incompetence, cowardice, ignorance, and lack of interest, were the rule rather than the exception. In the circle of the dike reeves, incompetence and nepotism

reigned supreme: 'They were mostly good-for-nothing's, who could become a dike reeve, because they came from a rich family, because they married the sister of the count, or because they offered the most money for the position' (ibid.: 86). Most often the dike reeves had no knowledge, but they were vested with a lot of power. They are described by Vierlingh as 'lazy, self-important fools, and slaves of routine and habit' (ibid.: 92). It is a history punctuated by disagreement at all levels, about the direction to take, and about the content of water management. A history that reads like a contemporary critical reflection on organisation and/or organising, and which displays strong similarities with the series of corporate scandals of our time. Water management, as is shown repeatedly, is not just a technical challenge. It is, above all, a rich breeding ground for political, religious, administrative, socio-cultural, and economic tensions and conflicts. It also is a history of wars, in which dikes were pierced; a history of the plague, cholera, and famine; and a history of disputes. It is underpinned by clashing worldviews, abrasive paradigms, and conflicts of power and interests. The 'water wolves' benefited from this, as they continued to lash the country with storm tides and disasters.

Yet it also is a history in which people came forward who imperturbably acted against the mainstream, and decisively, intelligently and possessed with an almost inhuman determination, ultimately realised major innovations. A good example of such a figure is the North-Hollander Jan Adriaenszoon Leeghwater (1575-1650). Besides being mill designer, in his case for dry milling, and the inventor of the diving bell, with which one could fix locks underwater, he made his name by reclaiming the Beemster, the Wormer, the Purmer, the Schermer and the Heer Hugo Waert, supported, among others, by wealthy merchants from Amsterdam (ibid.: 112-156). Others followed: Nicolaas Cruquius (1678-1754), who wanted to professionalise and institutionalise water management, and who didn't shy away from wanting to drain the Haarlemmermeer. Plans, which were realised, by trial and error, only in the middle of the 19th century, under the leadership of Jan Anne Beijerinck (ibid.: 184-203).

Systematic organising has expanded enormously since the second half of the 19th century. The historian Auke van der Woud wrote a meticulous study of that expansion in relation to the creation of the modern Netherlands. The rise of modern science has shown us that reality can be seen to function in a logical and systematical way. The systematic became 'normal'. The non-ordered, that deviates from the norm became abnormal. Systematic insight and acting has been proven to be effective. The so-called belief in progress became one of the most accepted and dominant ideologies. The future did not have to be awaited, it became something one is able to make. Increased knowledge was thought to linearly be related to increasing power and control over nature (and fellow man). Typical aspects of the belief in progress are objectivity, reduction of the unexpected and uncertain, predictability of the future, hierarchy, and control (Van der Woud 2006).

Adriaan Volker (1827-1903) embodied this modern vision of society, and the manipulability thereof. Water management of the river area had been neglected so far, and floods were endured passively. But a turnaround occurred. In the words of Rooijendijk: 'The idea that nature should be subjected became widely spread in society. Simultaneously, the state was centralised. The government became powerful and strong and could undertake the construction of large water management structures. Soon more money was spent on the rivers than on the entire reclamation of the Haarlemmermeer' (Rooijendijk 2009, 2011: 244). Through numerous innovations, the Adriaan Volker Company took the lead in dredging. The undertaking of infrastructural works was expanded enormously. And, as a temporary final chord, after centuries of struggle, a large-scale plan to tame the water of the Zuiderzee was designed by Lely.

This led to the draining of the Wieringermeer (1930), the construction of the Afsluitdijk (1932), and all the postwar reclaim of land. Another major project, which was the result of the flood of 1953, forms a climax: The Delta Works in South-Holland and Zeeland, with a duration of over 30 years of work.[46] A climax from the point of view of engineering, and, later, in thinking in ecological and environmental terms. Additionally, there has been an ongoing process of innovation in thinking about water management. And the Dutch language has been enriched: a vision or plan of importance, regardless of the subject, from then on receives the predicate 'Delta Plan'.

Living with Water: Ongoing Contextualisation

The disastrous year 1953, can be regarded yet another turning point in thinking about water management. The water had to be dealt with for the last time. A trend that continues to this day. From that moment on, the interest, which until then was mainly sectoral (agriculture and industry), was widened to include public interest; and, from 1970 onward, it has expanded further to also include the management of the quality of surface and underground water. In the mid-nineteen-eighties, integral water management is born, and partly because of that, a process of decline of the traditional and dominant role played by (knowledge) institutions in water management, was started (Blankesteijn 2011: 2-6). Increasingly, there is a 'differentiated interplay of forces, for example, from industry, science, NGOs, and citizens' (ibid.: 5).

With seven-league strides, I will sketch the process of water management during the past fifty years. I will thereby touch upon several important issues. The waterboards

[46] In the night of January 31, 1953, the Netherlands was hit by the worst storm surge of the 20th century. (source: website of the Royal Netherlands Meteorological Institute: www.knmi.nl, consulted 25 february 2017).

have always known a high degree of autonomy, expressed by their ability to impose taxes, and in ancient times, by the administration of justice. Thereby, the triade 'Interest – Pay – Control' plays a central role: if your interest in water management is large, you pay more, and that leads to more authority over policy. Since World War II, this has gradually changed. Interest initially consisted mainly of the interests of the agricultural and industrial sectors. After 1953, this widened to a general interest in relation to safety. At first, this still mainly involved quantitative water management – i.e. the supply and removal of water. From the beginning of the 1970s, the quality of water became important, and thus the influence of the ecologists came into play. Mid-eighties, the policy is further refined into integral water management.[47] Later, spatial planning is also included, and the interests of nature, conservation and recreation are put on the agenda, as well. In addition to political and administrative consequences, these developments have implications for the role of knowledge (ibid.: 2-3). In the words of Blankesteijn: "The Water Board has developed from an 'autonomous' technocratic operating administrative body into a 'fellow administrator': from a representative of the peasantry, into a mediator between various interest groups" (ibid.: 11). This means that water management becomes a complex affair that besides integrating environmental, social, and spatial knowledge, is also in complex interactions with other sectors.

The debate on interests, thus also on the financing and authority of water management, has yet another dimension: the *centralisation versus decentralisation* of water management. Historically, the management of water was very locally oriented towards specific groups (especially farmers). Waterboards operated on a very small scale. That implied that knowledge about water management was limited to that scale, and so was the financing: 'In 1955 there were 2.480 water boards spread across the country, though through amalgamation actions it has been reduced to a total of 25' (De Boer and Bressers 2011: 16). To this day, expansion from private interest to public interest, and deficient (front-line) professionalism and decisiveness, are the driving force behind the increase in the scale of the waterboards – i.e. upscaling supposedly will improve efficiency and professionalisation. In addition, financing water management is a recurring problem. These conditions nourish an on-going debate concerning the legitimacy of the waterboard: both its democratic legitimacy and the legitimising of its expertise, are subject to debate (Blankesteijn 2011: 23-61). Expertise is the ever-played trump card of the waterboards when threatened in their right to exist, and it is simultaneously their weakness. If that expertise is questioned or ignored, waterboards run out of steam, having no other trump card to play to justify their right to exist: 'The central government,

[47] Integral water management entails all activities and actors that are geared to one another, in relation to water (surface water, groundwater, drinking water and so on, and so forth). Integral water management includes national and international policies about water, spatial planning, landscape, nature, recreation, and environment.

for example, questioned the competence of water boards after the great flood disaster of 1953. It tried to dismantle an overly large preponderance of considerations based on interested parties, by announcing a series of large-scale mergers, to give water boards the opportunity to increase their technical knowledge. (...) Water boards themselves finally started to put more emphasis on their expertise' (ibid.: 61).

The expansion of general public interest and, later, (frontline) professionalisation (from 1970 onward), has led to widened expertise as well (nature conservation, the environment, and spatial planning), and to breaching (regional) isolation with the entry of new players, such as (inter)national government, citizens (who, from 1992 onwards, had taken on the bulk of the financing via taxes), other knowledge centres (public administration, political science and social sciences), and NGOs (environmental and nature conservation movements). And recently, the issues of climate change and biodiversity have been included in the ongoing contextualisation of water management. To confront this rapidly changing complexity of water management, the so-called 'area-oriented' approach has been invented. The approach is dedicated to trying to contain the inherent complexity of water management. An attempt which then leads to complicatedness: "The problem is that integral policy can go too far. The result may be that 'a Christmas tree with hundreds of baubles' (problems and solutions) is created; striving yet again to find 'integral solutions', may turn into 'bedlam'. This puts additional demands on the design of process architecture when working in an area-oriented manner" (Bekkers & Lips, 1998: 166, quoted in Blankesteijn 2011: 251).

Complexity Enters

Several recent studies have considered the role of knowledge when coping with complexity (Geldof 2001; Van Hemert 2008; De Boer & Bressers 2011; Blankesteijn 2011; Kouw 2012; Cath et al. 2010). In the words of Blankesteijn: 'From the 1970s onwards, water boards had to legitimise their water management in a different way. Changes in the level of actor configurations, changing resources and rules, and changes on the discursive level, interacted here. In the development of a different way of legitimising their water management, changing contents and kinds of knowledge to be operationalised in water management, as well as a changing knowledge infrastructure, have played a crucial part' (Blankesteijn 2011: 306). Thinking complexity resists decontextualised positivist knowledge. Complexifying of knowledge (of infrastructure), which among other things is reflected in an increased interdisciplinary knowledge flow, is also to be observed in river science. But this isn't so much reflected in further theorising, but in the primacy of techno-science, in which various disciplines exchange knowledge at a local level. Techno-science, as reflected in increased modelling, seems to be replacing

conceptual development: 'The question may be turned around: do river scientists (still) bother about conceptual development and how? Here, it appears that complexity thinking has brought about a remarkable shift. Around 1980, emerging interdisciplinary river science saw its last attempt at developing a unified theory. The widespread adoption of complexity thinking in the eighties made theorizing a much more local affair, in the sense that the modelling of processes proceeded without an overarching theory. Complexity thinking does not provide overarching theory' (Van Hemert 2011: 113-114).

It should be noted that what is discussed here is nonlinear deterministic complexity, in which theorising complexity plays no part. The debate mainly concerns interdisciplinary modelling and simulations, in which the complexity of the issues at play is discounted. Coping with complexity is thus reduced to a discussion about the modelling thereof in an interdisciplinary context. A context that gives rise to epistemic opacity: how can the various disciplines of knowledge understand each other epistemically? How can a philosopher of science engage with a theoretical chemist? In this context, the opposition between Mode-1 and Mode-2 science plays an important and disturbing role in the (non-)production of knowledge (see Chapter 1). Reflexivity is, in this (absence of) dialogue, an important destabilising third factor (Morin 1977/1992; Regeer 2009; Letiche & Lightfoot 2014; Nowotny et al. 2001).

An absence of reflexivity (learning) is an important characteristic of nonlinear deterministic complexity as opposed to social complexity (Stacey 1996). This doesn't mean that modellers show a lack of reflexivity. In a study of epistemic opacity in computer modelling and simulations in the context of water management, immersion, and epistemic opacity as a dilemma has been investigated by Kouw (2012). Immersion occurs when simulation and modelling practices are taken for granted, and the epistemic opacity of these practices are no longer reflected on.[48] Likewise, when simulation and modelling practices are relocated to other (policy, business) contexts and only particular knowledge and their epistemologies are included, you get immersion (ibid.). In the wording of Kouw: 'Thus, epistemic opacity can be seen as a characteristic of black-boxed technologies, in this case, simulations and models: the latter's underlying complexity and everyday functioning according to expectations reduces the likelihood that social actors can or will question the simulations and models at their disposal, which can lead to immersion' (ibid.: 64). Immersion is an important issue when the simulation practice is taken for granted by the involved actors. Opaque underlying design assumptions of

[48] Kouw: 'Immersion surfaces when simulationists or other social actors involved with simulation practice take model output for granted, and do not consider the more and less hidden designs on which the functioning of simulations and models relies. The idea that the surface or appearance of technologies and even everyday practices harbor a more elaborate background that remains hidden from view is a recurrent topic in various philosophical studies of technology, and reveals epistemic opacity as a more general characteristic of technological practice' (Kouw 2012: 203).

the models are disregarded. This epistemic opacity characterises technological practice and begs for reflexive practice: 'Rather than focussing on technological breakdown, those interested in immersion should focus on the role of technologies in knowledge production and the various ways in which practitioners interact with these technologies' (ibid.: 205). The step towards a social complexity perspective on water management has been announced by De Boer and Bressers:

> 'Contextual Water Management (Kuks 2005) starts by acknowledging that water is not a sector that can be set apart from others and dealt with in isolation. As much as water is influencing many aspects of human society and natural life, it is influenced in return by them. (…) The social context is no less important than the natural context of water system's characteristics. It is a source of demand for water-related goods and services and it is also a source of inconvenience for the water managers, as is acknowledged in many integral water management concepts. The social context is possibly even more important for the problem-solving side of the system. Management is by no means a manager's deed only. (…) As a result, a contextual variation of solutions is normal and blueprint planning, fixing details in advance of the interaction process is a recipe for failure' (De Boer and Bressers 2010: 211).

Geldof preceded this turn towards complexity thinking in water management, with his complexity research over the past 25 years (Geldof 2001/2005; Geldof 1994/2000).

Contextual water management, unconsciously, refers to the principles of complexity by Morin. Contextual water management can be characterised by *recursive causality*: water produces the society and is, in its turn, produced by the human society in an ecological context. Water is simultaneously physical-chemical, and part of the biological as well as of the anthropological. These different aggregation levels can therefore not be treated in isolation, as is predominantly the case up to now. This resonates with Morin's *holographic complexity principle* that the parts show emergent interactions with the whole and that the whole entails emergent interacting with the parts, thus, avoiding a holistic (systems level) or reductionist view, which looks at the parts in isolation. After all, the complex contexts of these different aggregation levels interact recursively.

The term 'integral' needs to gain a holographic rather than a holistic significance – i.e. explanations on system level alone are not satisfactory, just as much as reductionist explanations are not satisfactory on the level of the parts. This has major implications for the *'ecology of action'* of a water manager. As I discussed in chapter 5, 'ecology of action' stands for a process in which intentions are emergently transformed by the context in which they act. Water Management - which is one-sidedly focused on hydrological quantity, ecological quality, or social-cultural contexts - will see its intentions fail over time, because the actions arising from these intentions, don't consider the effect of the

other aggregation levels on the actions. An important consequence of this is that the intentions get snowed under (Morin 1977/1992; Morin 1990; Morin 2004). In sum, the term 'integral' shows no respect for the emergent, recursive properties of the parts of the system - i.e. integration through differentiation and differentiation through integration. In Morin's phrasing: Unity in Diversity and Diversity in Unity.

An experienced frontline professional from a waterboard puts this lack of attention for dialogic recursivity and ecology of action as follows: 'It is not so much *the* perspective which you hold that is the issue, but accommodating the *various* perspectives of others is of decisive importance. Perspectives are not innocent: they have an impact on implementation. The propagation of a perspective is sometimes confused with reality – i.e. it often means that other possible perspectives and contexts are brushed aside. At least one should discuss this pushing away, explain it. What you now rule out as an adjacent possibility is a possibility, which might suddenly emerge later, and then you may well continuously have to take various expensive corrective measures. And in this way, you create complicatedness' (Geldof et al. 2014: 26). In this view, the complexity of water management is reduced to complicatedness. Emergence, as an expression of complexity, is pushed into the background. The ongoing adding of context is then, above all, understood as coping with ascribed contingencies, which is something different from coping with complexity. I don't deny that contingencies - understood as known unknowns - also have an emergent aspect, but they are above all understood in terms of coping with complicatedness. Complicatedness, which is partly created by an integral approach, which denies recursive causality between system and parts. Contingencies then are comparable with ascribed coherence, whereby one categorises and designates several contingencies in advance, counteracting, complexity by adding even more complicatedness. Thus, dialogues on complex water management comes, possibly unintended, to a dead end.

Coping with emergence puts more emphasis on emergent coherence and on how it affects the labels of ascribed coherence and vice versa. It apparently remains distressing to allow rich context into intentions and the resulting actions: contextualisation is after all perceived as a contamination of the aesthetics of the plan and the actions based thereon (Nowotny et al. 2001, 2008). Emergent multiplicity supposedly should be tamed and reduced to an irritating surface phenomenon. But can the beast be tamed? René Ten Bos echoes Morin's holographic principle as follows: 'That the geographical circumstances should be given room in our reflections, is part of the geo-philosophical *ethos*. According to this philosophy, we can't keep the earth in all her manifestations outside of our thinking. The sea is one of the manifestations of the earth. Geologists are certainly right when they say that the sea is a surface phenomenon, but because most people live close to the sea, it is a surface phenomenon, which profoundly determines and controls our lives and our thinking. That not only applies to the sea, but also to inland seas, rivers,

lakes, ditches, and streams. Everywhere, even in the driest deserts, people live off water and with water' (Ten Bos 2014: 299).

A Leap into the Deep End

In the transition towards the contextualisation of water management, which took place over the years, a couple of lines of thought have emerged in the thinking about how to cope with complex water issues. Increasingly, different issues and corresponding actors interfere with water management. Different knowledge and expertise are introduced, and the different aggregation levels (technological cultures, frontline practice, management, and the political-administrative), which previously were enclosed in their own discourses and worlds, increasingly interact with one and another. These processes contributed to an ongoing complexification of water management and can be noticed in several places: for instance, in the debate on strict separation between pure science and applied science, and in the search for interdisciplinary knowledge between different, often separate, disciplines – i.e. natural sciences, life sciences, social sciences, and humanities. A tentative debate between the different epistemic cultures, about a preference for a quantitative model-based instrumental production of knowledge, and/or a qualitative interpretive approach, has begun. The notion that water management is a complex issue, which assumes reflexivity in knowledge production and strong contextualisation, has started to dawn on the participants – i.e. the complexity of the issues is no longer denied; on the contrary, but what the consequences of such a framing are for acting, have hardly been acknowledged. This resonates with what I have mentioned about how to cope with climate change (complex) with an instrumentalisation that would only be adequate in relation to complicated problems.

In this section, I will discuss a narrative-ethnographic research project, called 'A Leap into the Deep End', which I carried out in the world of Dutch water management.[49] The project was part of the then 'Living with Water' research programme of the Ministry of Infrastructure and the Environment. The research focused on the role and position of experiential knowledge in water management. Many 'Living with Water' studies and stories suggested that experiential knowledge was being marginalised relative to explicit, modelled, quantitative knowledge. A second reason for researching experiential knowledge was the observation that water management had been complexified through an ongoing process of contextualisation. In addition, water management (governance and knowledge) is principally supported by attributed coherence and positivist knowl-

[49] Govert Geldof initiated this research project with Albert Cath; later Gijsbert van der Heijden and Roel Valkman joined in.

edge, with languishing attention for coherence informed by experiential knowledge. The researchers, informed by many experienced professionals, assumed that coping with complexity requires a renewed call for attention to experiential emergent knowledge, besides attributed, explicit knowledge. This, and a rising unease in the water world about the marginalisation of experiential, emergent knowledge, finally led to researching the role and position of experiential emergent knowledge in water management (Cath et al. 2010; Cath et al. 2011).

Explicit knowledge is predominantly represented in models, protocols, notifications, rules, and standards, mostly in a numerical and graphical form. This form of knowledge does not escape generalisation and formalisation. Explicit knowledge is abstract, decontextualised, denies emergence and can be meaningful at a high aggregation level. Experiential knowledge is a knowledge that, on the one hand, is personal and embodied: knowledge one acquires by investing a lot of time, attention, and curiosity in a subject. In this sense, it resonates with craftsmanship. And on the other hand, experiential knowledge emerges in interaction with others, thus exceeding the sum of individual knowledge. There are several types of interaction: interaction between Self and Group, and interaction between Self and Environment. Emergence, the fourth factor in the dialogic square of Self and World, complexifies these interactive relationships even further. Because of the interactive character of experiential knowledge, it can be understood as local, context-specific knowledge – i.e. knowledge that relates to a specific practice or knowledge domain. In other words, it is a specific context in which work, knowledge, the social, the technical, and the ecological cohere in an area or on an issue. It concerns knowledge that is not separate from a context and respects the specific complexity of a context. It forms the tacit dimension, the foundation on which explicit knowledge, transferable knowledge, information, and data, are based. Both forms of knowledge, experiential knowledge, and explicit or formalised knowledge, codetermine our identity and ability to identify (adjacent) affordances to act in the environment. The project 'A Leap into the Deep End' explored the role and meaning of experiential knowledge in organisation and/or organising of water management in the context of coping with complex issues.

The research project was conducted with three waterboards, the Ministry of Infrastructure and the Environment, and STOWA, the Foundation for Applied Water Research, each with their own interests in the subject. In addition, interviews were held with a group of experienced professionals from the sewerage world. Two joint meetings for the representatives of the participating organisations were organised at the beginning and end of the project. A panel of experts supported the project. In total, more than sixty water managers participated in the study. All the interviews and workshops were recorded with an MP-3 player (Cath et al. 2010). The data in the study (obtained from

narrative interviewing; see chapter 1) were created by considering concrete local practices, within the participating organisations. The following organisations participated:

- STOWA: Knowledge centre of the regional water managers (mostly the Dutch Water Authorities) in the Netherlands.
- DG Water: Directorate General Water of the Ministry of Infrastructure and the Environment.
- Waterdienst RWS: Knowledge centre of the Ministry of Infrastructure and the Environment.
- Waternet/AGV: Waterboard.
- Waterschap Hollandse Delta: Waterboard.
- Hoogheemraadschap Delfland: Waterboard.

Local practices can be characterised by their living issues and dynamics. The research project was not so much *about* these issues but was more an attempt to research how the issues existed from an inside perspective. In this chapter, I make use of the dataset to examine how the dialogic square of Self and World by Letiche & Lissack can be operationalised. The study 'A Leap into the Deep End' showed that the following factors/clusters were meaningful: the cluster of Management, the cluster of Political Governance, the cluster of Technological Professionals, and the cluster of Frontline Professionals. A cluster is a coherent group of people, with shared experiences, values, epistemology, and practices (see figure 22). They are set in their own routines, their own epistemic cultures, and their own specific contexts. They form a cluster not so much because of a deeply felt purpose, but rather as an unintended consequence of the above-mentioned processes of contextualisation and historical development in water management. The four clusters, in conjunction with one another in a complex way, define how organisation and/or organising water management cope with complexity in relation to the issues at hand. Following Letiche & Lissack, I differentiate between ascribed coherence and emergent coherence in relation to coping with complexity. Implicit, experiential knowledge is associated with emergent coherence, and explicit quantified attributed knowledge coincides with ascribed coherence. Emergent coherence associates with complexity; ascribed coherence with complicatedness. I observed that this distinction holds well in all four clusters.

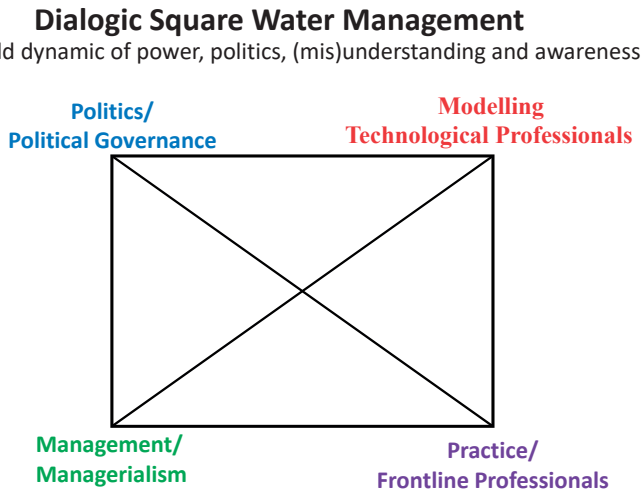


Figure 22

The research showed that in recent years, several trends in managerialism have increasingly resulted in a dissociation between people and their sphere of action, between people and their colleagues, between people and their managers and directors, between people and their subordinates, and between people and their clients. These developments, on the one hand, imply an ever-increasing dissociation of 'knowledge' and 'knower'; and, on the other hand, they are the consequence of an increase in the scale of the sphere of activity. Under pressures of knowledge management, management has tried to capture knowledge from those who possess that knowledge, built up through years of experience. This has resulted in a disconnect between context and knowledge, and a decline in the ability to deal with context and the complexity thereof. To rotate people, irrespective of their knowledge, to other areas, and because of that, to different work, is an example. Another example is the policy to maintain people on a job only for a few years or to try and distil people's knowledge to store it in an expert system. The combination of these types of interventions and the increase in the scale of organisation in the sector distances people from each other and has led to what I call: *Emergent Cluster Issues* (Cath et al. 2010 & Cath et al. 2011 & Cath 2015).

I conceive of organisations as the provisional result of emergent interactions within and between various clusters. Individuals sometimes migrate from or balance between more than one cluster. Each cluster is a richly perceived whole of continuous conversation, of ongoing debate, of shared experience, recent or old, and a collection of experiential knowledge embedded in, storytelling that evokes images about occurrences that present themselves. However, espoused decisions are continuously taken, which show how people try to organise reality in their cluster. Decisions can be contained in a solid statement, a speech act, a definition, but also, and then it becomes a cold weld,

in a formal decision, a formal complaint, a protocol or a model - the diversity in form is great. In chapter 4, I discussed the issue of cold welds. We speak of a cold weld when explicit results from one organisation and/or organising phase are 'thrown over the fence' in the transition to a new phase with a new arena of actors, or in this case clusters (basic phases are Policy > Strategising > Planning > Implementation). What is notable in the water world is that some cold welds have a tangible and physical character. For example, we find the impact of water level decisions in detail in how a concrete water system functions. We find abstract decisions in the finetuning of technological infrastructures in practice (ibid.).

I wish to distinguish between strong and weak signals that are observed by the 'radars' belonging to a clustered system. Strong signals (identified trends; known facts) are part of the legitimate, unproblematised narratives in an organisation at any a given moment. They dominantly inform the affordances on which actions are based (ascribed coherence). Weak signals are emergents that might be observed by a few individuals who may try to bring them forward in the dominant organisational narrative (emergent coherence). Weak signals, which are 'not seen by almost anyone', might be the basis of a profound change in genesis (butterfly effect). Clusters co-determine whether, how and to what extent experiential knowledge affects the processes in a cluster and between clusters. For example, in the cluster of frontline professionals, an action is largely based on experiential knowledge, while the modellers base their decisions more on ascribed knowledge. Emergent coherence is therefore constitutive for how a cluster provisionally proceeds, and how the cluster determines to what extent experiential coherence fits in. Clusters partly ascertain the simulacra that shape the realities within a cluster, and between clusters, and whether simulacra are contextualised through a dialogue about the simulacra. The whole of the clusters and the decisions that arise in the interrelationships between the clusters codetermine the state of the organisation and/or organising at any given moment (Cath et al. 2010: 27-28).

In chapter 6, I discussed the consequences when simulacra of ascribed coherence push aside the simulacra of emergent coherence - i.e. the paper reality is put in the foreground and texts of the experiential realities in the background. The reverse is also true, simulacra of emergent coherence can push aside the simulacra of ascribed coherence. In both cases, the recursive dialogic processes about the simulacra come to a halt. In water management, one can distinguish, for example, different recursive dialogues about the simulacra in relation to modelling. The model gradually replaces experiential realities – i.e. experiential realities are perceived as 'model noise'. The model becomes a goal instead of a means. Rivers, seashores, and estuaries, are both natural and artificial. Coasts are often largely natural, but there are rivers that are hardly different from canals. You can see here a sort of cyborg existence: partly cybernetics, partly organism. The debate revolves around 'building with nature', or matters simply focuses on technological

solutions, which largely decontextualise matters. The two worlds have great difficulty to speak each other's language. They are different worlds that are paradigmatically separated from each other and therefore the flow of experiential knowledge between them is problematic (Geldof et al. 2014). The stories often show a denial of complexity – i.e. modelling as a reduction of complex water management.

This reduction is articulated in an interview I made with an experienced professional of a waterboard. This professional established a link with coping with uncertainty and allowing emergent multiplicity: 'Often, complex projects are made very complicated by pushing uncertainty aside. And then it becomes a Gordian knot that causes paralysis, and consequently, nothing happens. I will illustrate this complicatedness with an example in which this tendency to simplify the complexity of an issue becomes apparent. Years ago, it was decided to automatise a thousand dams. After automatising a hundred dams, we reviewed the impact. It was a huge disappointment. The simplification, letting the locks in the dams go up and down automatically, turned out to be a waste of money. I believe that the governors need to ask other questions: What is the degree of the quality of the area to which all participants will agree? Then you can attempt to achieve that by taking all options into consideration, so you don't simplify the complexity and associated uncertainties, and thus just make the situation (more) complicated' (ibid.: 14).

I will now, firstly, describe the represented factors/clusters of my analysis. Then I will discuss the relations between the factors/clusters in different trilemmas, based on the dialogic square of water management. Then, I will elaborate on the shadow themes which show some of the emergent processes that separate and connect the four discussed clusters and their different trilemmas.

The first factor encompasses the Politics/Political Governance Cluster

The Political Governance Cluster is made of the elected governors of the waterboards. They are part of the administrative structure and levy the taxes. For the spending of the money to be controlled democratically, the governance of the waterboards is elected. Knowledge and sagacity are supposed to be at the forefront of the waterboards, and this regularly is at odds with political governance, as the New-Year's Day story demonstrated. The board is intended to represent the different interests, while knowledge is vested in the organisation. The board of governors consists of a general board, which is the highest decision-making body, and which consists of representatives of political parties and interest groups. Board members have specific interests in one or more tasks that the waterboard exercises. The executive committee is responsible for the preparation

and implementation of the decisions taken by the Board of Governors.[50] The executive committee is composed of elected governors and the dike reeve, who presides it. The Crown appoints the dike reeve for six-year renewable periods. The composition of the Board of Governors mirrors the ancient proportional triplet Interest/Financial Contribution/Authority – i.e. the more interest, the more one pays, the more one has to say (Dersjant 2014; Blankesteijn 2011). In this cluster, one is supposed to rise above the everyday issues of the water organisation. On the one hand, governors lean heavily on the expertise of the water organisation. They should be able to rely on the fact that as much complexity as possible is taken care of there, so they can keep their hands free to engage in politics and governing. On the other hand, they also want to control the water organisation. To this end, they can rely on their formal authority. The ambiguity between authority and dependence causes complicated boundaries to exist between this cluster and the other clusters. An experienced professional in water management said the following about this interplay of forces: 'I have been working here for three and a half years. I am working on a large project about the production of energy in a pond. The energy company wants energy from the pond that we manage. The governors are opposed to this. So, the board gave me the order: kill the project.' And another professional observes: 'When the issue is urgent, then all the governors sit together, but they cannot conjure up a protocol. That is done by the professionals of the waterboard and they have to hope that the professionals do have the necessary knowledge'. Or, as someone else comments: 'I recently piloted an important plan through the city council. The council meeting was about the image of our municipality and what slogan would correspond with it. That part was on the agenda before my item. The council meeting discussed the city marketing of the municipality at length. Then, my plan had to be hastily addressed: "Shall we just do that quickly now!?" A financial section for millions of euros went right through, just like that' (Cath et al. 2010: 30).

The second factor encompasses the Modelling/Technological Professional Cluster

The Modelling/Technological Cluster forms the basis of the technological culture of water management (Kouw 2012). This cluster consists of engineers, ecologists, hydrologists, and other specialists, who, as (highly educated) modellers, feed the organisation with specific scientific and technological knowledge. In this cluster, one largely finds water managers who rationalise processes in water management, by, for instance, developing and applying models, by taking measurements, and then comparing the

[50] See: https://www.wetterskipfryslan.nl/bestuur/algemeen-bestuur, consulted: 5 April 2017.

measurements with the models. In addition, more generally, they are engaged in designing technological facilities. Modellers are at a distance from the Political Governance Cluster. The water system and the area in which it lies are remote from them. The work does not require daily presence in the field, on the contrary, a certain distance is predominant, also because of time pressures. In this cluster, the hydrological and ecological aspects of water management are considered at systems level, mainly through technological lenses. The connection with the other clusters, which in the past was close, has become increasingly looser. An engineer, who was a contemporary of all the changes that have taken place in water management in recent decades, told the following: 'Here I touch upon a very tricky issue. How can one judge whether a model of a system approximates practical reality? I was quite cynical about this at the time I was working on the plans myself. I wanted to include a quote in all our reports: "Any similarity with reality …", but that is too cynical, we can describe the modelled systems quite well. But they depend upon the extent to which, and how, one schematises. One does not describe reality, what one calculates is the result of the data that one has put into one's modelled system. One can model a river system in different dimensions; the more dimensions, the more computing time is needed. I always say, more computational power goes hand in hand with poorer insight. But if one calculates how a river behaves one-dimensionally, then one should also include one's practical experience. Thus, professional experience plays a major role. But one doesn't achieve that by sailing on the river, one achieves it by looking at one's measured data with a craftsman's eye. Because, only when one knows how the system works, does one understand what is going on' (Cath et al. 2011: 41).

The third factor encompasses the Management Cluster

The Management Cluster consists of the managers and controllers, who over the past 30 years have slowly and surely imposed a managerialist view on the water sector, thus placing a specific view on organisation and/or organising. The Management has Cluster increasingly emphasised formalised rationality. Universal rules and regulatory mechanisms are imposed, whereby not the content of water management is paramount, but water management conceived of primarily as a management problem. Thereby one stays at a distance from the content. This separation between content and process does not appear out of thin air. Over the past few decades, increasingly, management concepts and methods, which originated in the private sector, have penetrated the public domain. Public institutions, such as waterboards, organise themselves as companies, providing certain products and services to customers. Moreover, the view is held that a strict separation exists between policy and implementation (new public management). Furthermore, another trend has gained momentum, argued from the point of view of ef-

ficiency, which is to outsource one's substantive tasks to the market as much as possible. In this cluster, the emphasis is on controllability, backed up by vast auditing trails. Here the pressure of the Political Governance Cluster is felt the most. One tries here to trim complex issues as much as possible down to manageable factors. The most appropriate way of doing this is to structure and categorise the many different pieces of the puzzle of water management as efficiently as possible. In this way, ever more organisational boundaries (cold welds) are imposed.

But it is also this cluster that more than any other, experiences how important it is that the organisation is a pleasant and attractive place to work. Research showed that this cluster is increasingly under pressure. Due to the increasing complexity of water management, the question arises, who is still able to oversee the whole puzzle? Who is still able to understand all the data and is then also able to indicate what knowledge is relevant? Here the dog bites in its own tail: the water puzzle has increasingly been cut into small, supposedly manageable pieces to keep complexity away as much as possible; and precisely because of that, the complicatedness of water management continues to increase. This culminates in growing decontextualisation and thus friction, for example, between technological professionals and frontline professionals. This paradox is expressed in the following account: 'The germ for the reorganisation is in the mergers. When it was decided to merge, several working groups were formed. They were intended to achieve unity in policy. But there was no solution for the frontline professionals. Therefore, four working groups have now been set up to operate as independent units. It was expected that these groups would collaborate and thus, at the proper time, unity would arise. Then one discovers that this is counterproductive; unity was not effectuated; the wish was a father to the thought. The different working groups felt themselves to be islands within the organisation. At one point, we, as the management team, said, based on our experience, let's stop this rationalisation, and rethink what suits the waterboard best' (Cath et al. 2011: 42-43).

The fourth factor encompasses the Front-line Professional Cluster.

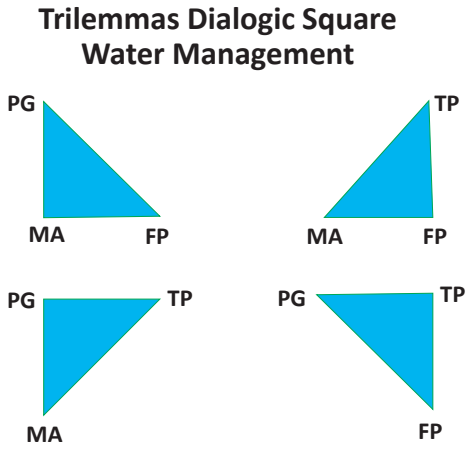
The Front-line Professional Cluster mainly includes men that are rooted in specific areas and craftsmanship. Their knowledge and sagacity are derived from years of experience in specific areas or crafts. They are men who speak the language of the field. They work in the field, at pumping stations, cleaning the sides of watercourses (e.g. ditches), and are, for example, responsible for supervising contractors who do the many smaller maintenance jobs in the field. Often, they have been working with 'their' waterboard for many years. This is the cluster in which the experiential knowledge of the man and the area almost coincide, and merge into each other. It is the cluster of people who are

able to act, know, and say water management; they operate in a deep relationship with the area: 'You should see the area - it's all so small-scale here. I've installed a lot of flood-control dams. Nice work, I'm a true water engineer. That is my knowledge. You must be socially grounded and/or involved in the area. I don't manage based on audit forms. I have worked here for about 30 years. Until the reorganisation I was always in the same area. Originally, I came from the agricultural sector, as most of us. When I arrived, the land consolidation had just started, and we went from the old situation to the new one. I knew the old water system and I was involved in building the new one. Because of one's involvement in the land consolidation, one, of course, gets to know the area in great detail. It is a very beautiful water system. With enormous smallness of scale, with diverse waterways, sometimes no more than a ditch, through which the water surges. It has unique flora and fauna too. It is different everywhere and I know every little spot' (Cath et al. 2011: 44-50).

I will now describe the four factors/clusters in the dialogic square of Water Management. After that I will break the four factors up into four trilemmas: a trilemma shows the interaction of three factors. In each trilemma, one of the four factors is put in the background, based on the research data. In all four trilemmas, three complex relationships (opposing, complementary, and contradictory) are present. They trade places regularly, without disappearing (rabbitduck effect). I mentioned before that trilemmas break the dichotomy of the dilemma and thereby break open the binary nature of thesis-antithesis. This issue, dilemma versus trilemma, is extensively discussed in the previous chapters: by introducing a third factor in a dichotomy, complexity (dynamic context, ambiguity, and multiplicity) will be better respected. I constructed the following trilemmas in response to the above-mentioned research.

Water Management Trilemmas

I will now repeat the sort of exercise that has already been done in Chapter 3 (Tranchée narrative), by developing and critically examining a dialogic square of water management. The four factors and their three relationships will be discussed from the different perspectives of four trilemmas, which means that one factor/cluster is each time put in the background. This foreground-background interplay will be repeated four times. I am trying to show the constitutive force of disorder interacting with order – i.e. to observe the ongoing clash between order and disorder in the water management trilemmas (see figure 23).



[MA: Manager] [PG: Political Governance] [TP: Technological Professional] [FP: Frontline Professional]

Figure 23

In these four trilemmas, the complex relationships between the civil service (technological professionals, frontline professionals, and managers) and the political governance of waterboards will be discussed. In the New Year's Day narrative, we saw glimpses of these processes coming to the surface.

Edgar Morin conceives of organisation and/or organising as the result of the dialogic and recursive interaction between order and disorder (see chapter 5). The interaction between the various factors in organisation and/or organising - in this case, Politics (PG), Management (MA), Modelling (TP), and Practice (FP) – are named clusters in this research, as we have already seen. Within these clusters, and between these clusters, there is a dialogic interaction between perceived order and disorder within the cluster and with the environment of that cluster; and between the different clusters and their environments. The dialogic interaction is characterised by recursive causality within and between the clusters and their holographic structure, whereby neither the cluster (system) nor the parts of the cluster *separately*, determine the cluster's organisation and/or organising. In other words, the clusters mutually produce each other. In holographic structuring, the parts are in the whole and the whole is in the parts.

One can walk through each trilemma by taking a factor/cluster as the starting point of the walk, and from that perspective drawing in two other factors/clusters. How these proceeds is partly dependent on the data set and partly on the choice of perspective. In this way, by taking different factors/clusters as a starting point of one's walk through the trilemma, one will perceive different meanings. This strengthens the rich complex picture of the factor that is being analysed. I will now go through some possible walks, choosing a starting point for each of the four trilemmas to be discussed. In the first trilemma, the trip through the trilemma will show the interplay between the

Technological Professionals and Management, and the Frontline Professionals as the third factor. The three complex relations (complementary-opposite-contradiction), will be drawn into the analysis as much as possible.

In the water management dialogic square (see figure 22) four identified clusters structure the factors: Political Governance, Management, Technological Professionals, and Frontline Professionals. The obvious pitfall is that this assumes that the actants in the clusters are homogeneous and thus reification waits in ambush. Compression is unavoidable, on the one hand; but, on the other hand, my analysis focusses on whether the dialogic square can be helpful in attending to emergent processes. In the concluding chapter, I will elaborate on possible weaknesses or errors in the proposed logic by comparing the Tranchée and the Water Management cases in relation to the complexity concepts.

A. Relations between Managers, Technological professionals, and Frontline professionals

In this trilemma, actual water management takes place (see figure 24). The complementary relationship between technological professionals (modellers) and frontline professionals, and the antagonistic relations with management, are crucial. As stated earlier, these relations are not absolute, but situational; antagonism arises between the modellers and frontline professionals, and the relationship between the modellers and management is more or less complementary. The political-governance is present in absence (holographic principle): political governance is less relevant. This is the trilemma, on the one hand, the different languages of technologists, scientists, and the frontline professionals are spoken, and, on the other hand, that of management (managerialism), as described in Chapter 4. This difference is essential.

Trilemma of the dynamics between labeled and emergent organisation and/or organising

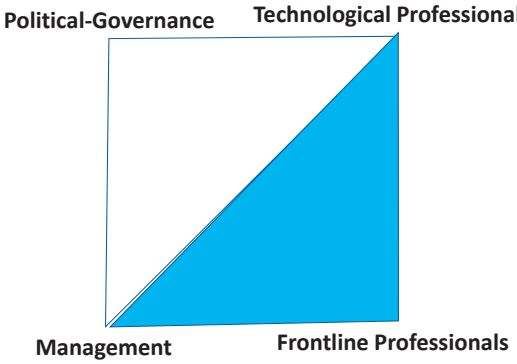


Figure 24

Modellers look at water management through hydrological, ecological and climate change lenses, and try to understand their facts on water system level. The focus in this cluster is on rationalising, through knowledge management. An important debate in this trilemma is about, in which place and by whom, knowledge is managed. Is knowledge management chiefly done by the waterboard, or outsourced to an independent knowledge institute, or outsourced to the market?

From the perspective of management, above all, increasingly formal rationality is in the foreground – i.e. universal rules and coordination mechanisms are to be imposed. Not so much the content of water management is paramount, but in which water management is primarily understood as a management problem (ascribed coherence). This separation between content and process did not drop out of the blue. Over the past few decades, management views and methods have spilled over from the private sector into the public domain. One can summarise this as new public management – i.e. where a strict separation between policy and implementation is an important corollary. Another consequence as argued from the viewpoint of efficiency is the outsourcing of as many tasks as possible to the market.

Managers and Modellers are remote from the Political Governance cluster, and from the physical water system as well as from the context in which the system is situated. The effort is to control water management as rationally as is possible. In this regard, there is complementarity between the management cluster and the modeller cluster; and antagonism with the frontline professionals. Complexity is reduced to complicatedness. There is a great deal of attention in this trilemma for knowledge management based upon orderly principles. Knowledge, from an instrumental knowledge management

point of view, is a marketable and manipulable object. This line of reasoning, increasingly assures that knowledge should be transferred to the market. What is misleading about this, is the underlying thought that it is a reversible process and that one can properly judge what knowledge is valuable to water management, and what is not. This issue leads to antagonism between the modellers and management. Managers do not have a thorough understanding of the relevant (knowledge) factors needed to complete complex tasks, and not seldom they lack an understanding of the complex relationships between various factors. Managers cannot oversee what knowledge is valuable, and thus also cannot know how that value should be defined. In other words: when different perspectives on a complex task – namely in the perspective of the professionals - are displaced by a partially ignorant, but dominant management perspective, this can lead to ineffective solutions. The main issue is that managers try to decide centrally about decentralised practices and knowledge. If decentralisation of knowledge leads to the scaling-up of local awareness, the hierarchical coordinating op knowledge will become increasingly problematic. Management often can not oversee relevant knowledge. This applies particularly to organisations that lean on professionals. After all, especially then, dialogue and participation in complex knowledge are crucial. Professionals moreover possess power over knowledge (management is kept out of the knowledge) and positional power (see tensions between formal and informal organisation). The consequence of this is that professional knowledge resists central and hierarchical control and coordination. Knowledge thus is characterised by different ordering centres (polycentric order), especially under complex conditions (Brohm 2005; Cath et al. 2010: 56-58).

Professional knowledge is both personal and shared with others, and therefore not open to pure objectification. The emergent processes in knowledge formation and sharing need to be considered from the different perspectives and affordances that arise within the practice (recursive dialogic). Knowledge is experiential (personal) and social (collective); it is partly dependent on the circumstances and the cluster in which one is situated. On the one hand, the clusters provide security, on the other hand, they can be a springboard for new discoveries, practices, and insights. Knowledge is charaterised by ingrained traditions and the repetition of solutions from the past on the one hand; and the creation of new meanings and affordances on the other hand (Cath et al. 2010: 57-58). In this trilemma, frontline professionals have experienced marginalisation. The frontline cluster embodies what people can do, know, and say (language) in a deep relationship with their context. This is voiced as follows: 'The area fits me as a glove, because of all the interventions and innovations I have done there over the years'; 'Everything is different for different areas'; 'Every place has its own story'; 'Knowledge of the area is crucial, because without it one overlooks potential solutions and alternatives" (ibid.: 36).

In all three clusters, but particularly in the frontline cluster, one can find water managers who try to connect different perspectives. This is partly the result of policy focussing on integral water management. For example, at waterboards, employees work on integral area plans together with project developers and community officials. The one frontliner sees himself as a policy maker, the other as a planner. These frontliners have some distance to practice and struggle with their relations with management and the modellers. The frontline professionals usually originate from practice, but now largely find themselves behind desks making plans and implementing them. They are charged with connecting practice with the abstract world of models and policy. They try to ensure that practice is reflected in the world of management and strategy. In their view, the complexity of the work is in coping with complex boundaries, which cannot be captured in the 2x2 Matrix, that have such a prominent role in management and modellers discourse (see chapter 4). In this trilemma, one must bring down the frontiers and at the same time impose frontiers depending on the circumstances and the task at hand. In this respect, frontline professionals often lament: "In the policy dialogue they don't have much feeling for concrete issues and considerations. We are on the cutting edge between theory and practice. In practice, one talks about our head office in terms such as the 'towers of doom', 'the ivory towers', 'the dictates of …'. The cold weld between these two worlds does not function very well. This can be visualised with two circles, of which one rotates slowly and the other quickly. There is the policy circle, which turns slowly, always making considerations as it takes a lot of time to take a decision, and there is the fast-rotating circle of practice: I have a problem and that must be solved now. And we are at the interface between those circles. This is an area of considerable tension" (ibid.: 39-40).

In this trilemma, one tries to cope with complexity. With resilience, one tries to avoid the many obstacles that are raised in practice by the abstract world of policy, area plans and management systems (ascribed coherence). One tries to match these abstractions to practice, and recursively, one tries to accommodate the realities and contexts of practice into the plans (emergent coherence).

B. Relations between Political Governance, Technological professionals, and Frontline professionals

This is a trilemma in which the perspective and contextualisation of modellers and frontline professionals dominate, and in which the realities of water management and of ascribed and experiential knowledge, still somewhat connect (see figure 25). In this trilemma, the professionals oppose and/or contradict the cluster of political governance, as we saw in the New Years' Day story. Two clusters (modellers and frontline profession-

als), are at a distance from each other but are simultaneously connected to each other (mutual presence in absence). There is a certain degree of complex marginalisation by other clusters (politicians and managers). The modellers and the frontline professionals have different power positions regarding the politicians. This is partly the result of the political governance, which focuses on integral water management. The different clusters arrange external coordination in different ways. The political governance cluster coordinates with other political actors; the frontline cluster collaborates with colleagues from other organisations in the field. The technological professionals work on integral area plans together with project developers and community officials. This trilemma increasingly represents a 'system estrangement' within different organisations.

Trilemma of the dynamics between labeled and emergent knowing

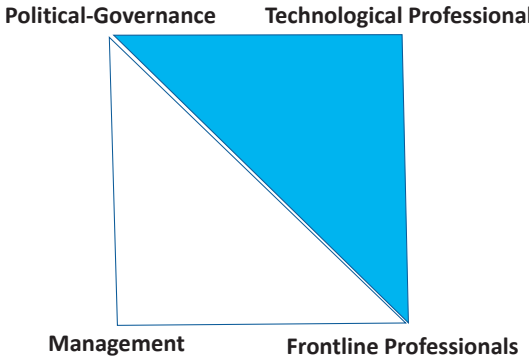


Figure 25

In this trilemma, the relationship between the politicians and the modellers can be qualified as mutual marginalisation; from each other, as well as both in relationship to the frontline professionals. The frontliners experience the gap between complex reality and the models daily. Both the modellers and the political governors have a paradoxical relationship to practical reality. Both clusters want to exclude emergence as much as possible, but do this in different ways and for different reasons. The Political Governance cluster excludes through power and authority, and its affinity with policy (ascribed coherence). They expect that the professionals (and managers) will take care of emergence. The modelling cluster seeks to exclude emergence through knowledge, and to rely on the ability of the frontline professionals to improvise (emergent coherence). The frontline professionals try to cope with emergent processes in practice. In this trilemma information (ascribed coherence) is regularly confused with knowledge (emergent coherence). Information is something one can look up, save, distribute,

reproduce, categorise, codify, protocolise, and manage. Information is not reflexive and contextual: one needs expert judgment to make sense of it and to be able to make use of it. Information, therefore, becomes useful only when it is related to an issue, and is made reflexive – i.e. is linked to a complex context. Experiential knowledge involves listening, talking, interpreting, translating, sharing, and working together by adapting, and acting – i.e. dialogic recursivity. The relational and reflexive character of experiential knowledge thus contrasts with the rational, codified, normative, and universal character of data and information. It is therefore not surprising that these two important aspects of knowledge collide in the organisation and/or organising of water management.

In contrast to information, knowledge has a highly situational and relational dimension. In other words, knowledge is created in a specific context, every time again, as no two situations are identical, nor blindly repeatable, in contrast to best practice theory. In the words of an experienced modeller: 'I have been working for years on the quality of soil in the context of the ecosystem. I am almost the only one in my practice who tries to capture the broader context. At the soil department, protocolling is in the foreground. The line of thought is, that you can always capture the world in formulas. We then make procedures for everyone, which are universally applicable – i.e. procedures are more trustworthy than experiential knowledge in practice. That's what I run into within my department and what I fight and act against' (ibid.: 52). This quote shows the resistance that exists in the practice of water management against standardisation, protocols, establishing fixed procedures and the propensity for concepts, which might make sense in *simple contexts* but are flawed in complex contexts. Differences are inherent in contextualisation, concern the type of analyses, knowledge, and coherence, as well as the ecology of action.

C. Relations between Political Governance, Managers, and Technological professionals

In this trilemma, the frontline professionals are absent in presence (see figure 26). I focus on political governance confronted with managers and modellers, the last two, for various reasons, want to keep the politicians as much as possible at a distance from daily water management. In this trilemma, complex relationships occur between governance, the managers, and the modellers. On the one hand, it concerns the denial of emergence (simplicity), but on the other hand, emergent processes in practice are present in the background (holographic principle) – i.e. the different clusters see different affordances. One can feel connected in fear of the indeterminacy that emergents engender, but different clusters try to cope with indeterminacy in different ways. Governance through power and authority; managers by reducing complexity to complicatedness; and mod-

ellers by working on models and protocols, and by considering to a certain degree, as we observed in the previous trilemmas, the position of the frontline professionals. The manager and governance cope with emergence by formalising from the viewpoint of efficiency. The managers and the modellers cope with emergence with rationalising knowledge. Governance and modellers cope with emergence by a double marginalisation. Governance and modellers both struggle with their relations to the managers. The modellers connect practice with the abstract world of models and policy as much as possible. With a lot of pushing and pulling they try to keep everything together, and somewhat ensure that the practice of the frontline professionals is reflected in the more abstract world of management, strategy, and governance. From the modeller's perspective, the complexity of the work consists of managing boundaries.

Trilemma of the dynamics between labeled and emergent knowledge

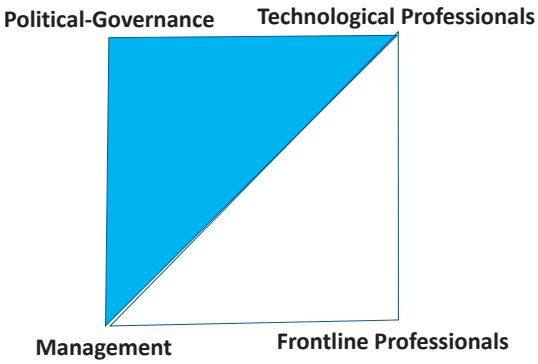


Figure 26

The people in this trilemma are in a way consistent: water management in the Netherlands has shown the far-reaching influence of science, technology, and rational water management for centuries. The same can be said of the application to water management of all sorts of rational management systems. Continuously, this trilemma creates confirmation of its self-referencing justification, through its claims of success. By focusing on more technology, repeated reorganisation, up-scaling of new systems, procedures, and protocols, it creates a world, that no longer can do without instrumentalisation (recursive complexity principle). Everything that deviates from the knowledge models and rational management standards, is considered as noise, which should be pushed away. The possibility that noise might contain interesting weak signals or sources of new affordances, is a priori regarded with suspicion: models and a world that is viewed in the light of models, does not tolerate uncertainty and indeterminacy. It is averse to

adjacent affordances that do not fit the models. In addition, there is a tension between the modellers and process-oriented rational management, as we have seen above. In the technological professional cluster, especially among the older generation, there is doubt about overdetermination and reliance on a strictly model-based approach. The technological professionals still tap from experiential knowledge, underpinned with the motto: measuring is knowing, but know what you measure. One still has the strong feeling that remaining in touch with practice is important, but because of the pressures of management and political governance, this hardly is the case (ibid.: 35-36).

The Political Governance cluster depends on the results of the two rationalising clusters. In these clusters of technologists, scientists, managers, and engineers where models, systems, procedures, and protocols dominate organisational structures and reorganisations are devised and implemented. Here the cold welds that reduce emergent processes to complicatedness are developed, and the political governance cluster relies on these. This is a cluster that is characterised by remoteness to reflexivity and contextualisation. The following quote by an experienced frontline professional expresses this as follows: 'While you are monitoring, you can also, to some extent, adjust the execution of a plan or design. But nobody ever asks us anything. For example, when building storage basins behind the sewer overflow, we are never asked if the designed storage basin makes sense for that specific location. I once went on a bus excursion and we went along all these storage basins. Some of them you could better change into a parking garage, as not a drop of water ever entered them. That always is the case with sewerage: you install something, it disappears underground, and nobody asks anything about it ever after' (ibid.: 70). An experienced technological professional put it as follows: 'In the strategy note about the IJsselmeer, written by an ecologist, I noticed that it was very much written based on downward ecological trends, and I found that very clever and strategic. In doing so, ecology was well positioned and brought into the spotlight. It was brought forward in the right manner, at the right time. Of course, that could have been done for other bodies of waters, but my colleague wasn't positioned to have a voice there. What often happens, is that political governance is confused with the actual natural situation. Attention to ecological trends simply exist, but that they got recognised was because this expert saw a chance to act upon them; suddenly the whitewater (which means it has an indeterminate status) was declared protected nature by a European programme' (ibid.: 48-49).

D. Relations between Political Governance, Managers, and Frontline professionals

In this trilemma, the complex relationships between Political Governance, Management, and Frontline professionals come together (see figure 27). The third factor that influences the relationship between the political governance cluster and management cluster, is the frontline professional cluster. The relationship between political governance and management is complementary, but often also antagonistic. The relationship between management and frontline is, at first sight, oppositional, but occasionally can take complementary forms in relation to political governance. This also applies to the relationship between political governance and frontline professionals, which at first sight is contradictory (presence in absence), but can sometimes also be complementary if they join to oppose their marginalisation by the other clusters. In this trilemma, the fourth cluster consists of the technological professionals (absence in presence). This mainly concerns modellers who occasionally show up in the field. The frontline professionals are often confronted with emergent events that don't respect the plans, models, or rules (emergent coherence). The frontline professionals are then confronted with the mismatches created by the rationalisation of water management.

Trilemma of the dynamics between labeled and emergent coherence

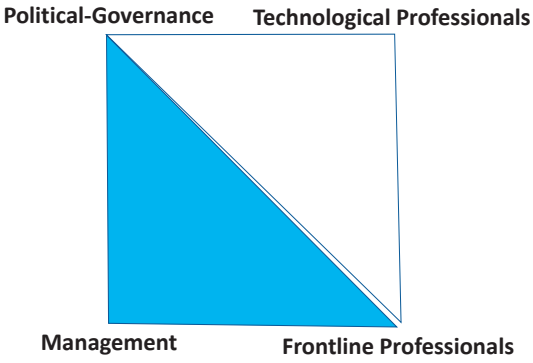


Figure 27

Waterboards have a long series of mergers behind them that have led to a substantial up-scaling in the organisation and/or organising. This has brought about many organisational consequences and changes (managerialism). While, in the smaller area-based waterboards, not long ago one could still work together in a small circle of colleagues with dialogues metaphorically speaking around the kitchen table; current

water organisations are medium-large to large (700-1800 employees). The politicisation of the Boards of Governors and expanding management layers have had consequences for both the relationships within the Boards of Governors and within management and between the different clusters. Management has been increasingly faced with the ongoing complexification of water management. The complexifying process has taken place in the context of the pursuit of efficiency (simplification). This can also be described as a collision between traditional water management and scientific water management. In traditional water management, learning processes via the line: master, apprentice, pupil dominated. By going into the area under the watchful eye of an experienced professional, and by listening to his instructions and stories, and by learning things by trial and error, experiential knowledge was handed over. Until about thirty years ago water management had few standards and little codification. The water systems were mainly designed and managed based on the rules of thumb and feeling. These were cultural technical handbooks in which research results were translated into practical advice. But water management was mainly based on emergent coherence. In the frontline professional's cluster, this mode of operation is still recognisable. Scientific influence has arisen through the desire to better underpin operations in water management. Increasingly, scientific research based on measurement, quantitative validation, models, and codification has been introduced. The introduction of computers and development of modelling has contributed to the ability to monitor the quality of water, and, for example, to link groundwater models to other models. As computing power has increased, integral water management has taken off. It was a matter of optimising differing water systems – i.e. managing at systems level (holism). This line of development is central to the rationalisation and codification that to this day is having a major influence on what is happening in the water world. Much has been achieved, but the associated methods may have run against their limits. This is expressed in statements such as: "We are not able to implement our plans!", or "It is all so logical, we explain it all very well and organise it neatly, and yet increasingly things turn out differently from what we meant' – i.e. in the ecology of action (Cath et al. 2010: 63).

In the dialogic square of water management, the relationship between managers and governance is mainly determined by formalism. Both managers and governance have a relationship with the frontline professionals that could be called ambivalent. Both clusters want to frame emergent processes as much as possible, but in different ways, and for different reasons. The relationship between management and frontline professional is determined by rules and budget allocation. The political governance cluster does this by exercising power and authority over management, and the political environment in which the organisation operates. This also seems to be the trilemma of hard choices: for reasons of rationality, manageability, and efficiency, managers, but also

governance thinks that the organisation should standardise and incorporate as much as possible in systems. The TINA principle, there is no alternative, pushes aside the SARA principle of some alternatives remain always. Managers, governance, and their advisors deem it inevitable to clarify, codify and incorporate the practice into systems, what is still indeterminate and consequently left to the (frontline) professionals. The fact that this has a price for professionals, but, for example, also for citizens and other stakeholders, in the form of less customised work and more formalism, is discounted. But it contributes to an ever-deeper gap between the 'paper' reality and the reality of practice. The question then is, whether the interpretations and realities of emergent practice can influence the abstractions of the plans. An experienced frontline professional puts it as follows: 'In practice, you need to cope continuously with emergent processes and then you unexpectedly find out that a constructed boundary is inconvenient. That is always the case. A recurring issue is: how do you act upon spatial developments? I am now working in an area with two polders, which lie between two cities, and we make decisions about water levels and water organisation plans, and eventually, we will draw up a master plan for the area. At the same time, a highway is being broadened, a new junction constructed; there are plans for an ecological connection, there is a working group working on a water route that cuts through the area, and there is another group working on a nature boulevard; the municipality wants to build homes, there is golf course that wants to expand, and the sewage section of the waterboard is also working on something. And at some point, you get the instruction to include all those wishes in your plan. These are unrealistic situations because, in that way, our plan will never be completed. These are developments that are going in all directions. I, therefore, think it is important to set boundaries. I listen to all interests because I do not want to submit a master plan that I will regret later; but at some point, the master plan must be completed and implemented. I will give an example: we had to build a pumping station in our area and the drawings of the Ministry of Infrastructure and the Environment showed that the planned highway went straight through it, that is an example of a plan that you will regret. And then everybody in the concerned area will fulminate against you. How can it be that two authorities, which are both engaged in water and traffic, do such stupid things with our money, is a widely heard remark' (ibid.: 42).

I have discussed, separately, different trilemmas of the dialogic square clusters of water management. Trilemmas, are not fixed, but show the necessary mutual dynamics, and traded places situationally, according to how the emergent processes developed. The clusters show heterogeneity; the people who populate the clusters are not tied up in some sort of straightjacket of a cluster. A continuous tampering with boundaries and a tug-of-war on and around boundaries, has been a feature of Dutch water management over the centuries. Borders that separate and connect, boundaries between sweet, saline,

and salt, between wet and dry, between land, water, soil, and air, and between town and country. Knowledge boundaries are to be found in the interfaces between hydrology, ecology, spatial planning, and administrative planning. In addition, the casuistry shows area borders, limits of plans, organisational boundaries, project boundaries, and so forth. We witness an ongoing balancing act between, often contradictory, interests and views; the ongoing bickering about life in multidimensional circumstances. The balancing act is storied as a continuous struggle, and sometimes reconciliation between the hungry water wolf and humans. The trilemmas show the complex relations between political governance, technological professionals, management, and frontline professionals; all trying to cope with the complexification of water management. A three-fold logic makes room for such analyses. The cluster stories show a two-faced attitude towards complexity: complex issues often beg for organisation and/or organising, but coping with complexity entails largely, rowing against an increasingly powerful stream of rational management, modelling, and political governance, which repeatedly invents new cold welds to reduce complexity to complicatedness (ibid.: 43-50).

It turns out, that managerialism has provided a paper reality, with the result that professionals are largely entrenched in various protocols, procedures, systems, and structures. A paper reality that, on the one hand, is useful to some extent; but, on the other hand, distorts, masks and sometimes even eliminates a more complex view of practical reality. There are two issues here: coherence and sense-making. How can we pry open the Janus-faced appearance of coherence (ascription and emergence), and what does this appearance really mean for (the absence) of dialogic recursivity, between the different participants? Attention and curiosity for the gap between how the world should be, and how the world is, hold a prominent place. This is what can be distilled from the many stories that were told in the research (Cath et al. 2011: 58-59).

Before I will reflect in the final chapter on this study, I will briefly discuss the follow-up to the water management research that I undertook. The research projects were initiated to search for action perspectives and conditions that might be helpful in improving the coping with complex issues. In most projects, all four clusters were represented. These research projects were guided by the lessons learned in the research project that I discussed in this chapter. The projects helped to research further evidence in support of and/or substantiating my analysis. I will now briefly discuss a project entitled 'Workplace Moorhen Park', which I organised from its beginning to end (Cath & Geldof 2015).[51] Then I will close the chapter with some concluding remarks.

[51] Albert Cath and Govert Geldof have conducted this research project. The research findings match other research findings of similar projects, in which I was partially involved.

Workplace Moorhen Park

The key issue in the workplace Moorhen Park was the merger between municipal and regional water management. The regional waterboard was faced with assuming responsibility for municipal water management in several municipalities. The prevailing theme of the project was an apparent *efficiency paradox* between the waterboard and the municipalities, but also between, and to some degree within, the clusters of the waterboard. The efficiency paradox rotates around different, often conflicting views on efficient water management. Waterboards are traditionally rooted in the country-side, and largely have a generic perspective on water management. Waterboards deal with a diverse set of actors (e.g. entrepreneurs and environmental NGOs). Municipalities are largely inspired by a specific perspective on water management – i.e. the difference between ready-to-wear and made-to-measure. The guiding principle of efficient water management, which was presented by the waterboard directors as a self-evident, proved to be very opaque when it was contextualised in the workplace. Within the clusters, but also across the clusters, a highly complex picture emerged, much to the surprise of the participants. When confronted with the differing perspectives on the efficiency of the municipality, a Babel-like confusion of tongues was witnessed. Urban water management happens on a different level of complexity, and present itself as a multifaceted problem demanding a high degree of flexibility and detailed specificity. Municipalities also deal with a different set of actors: civilians.

Water management is a side-issue for a municipal administration that deals with all sorts of other (infrastructural) issues. A traditional generic approach could be disastrous. It should be noted that this observation did not surprise the frontline professionals of the waterboard, since they collaborated daily with the municipality. A yawning gap between practice and labels was apparent. The simplification of water management to top-down strategy settlement, translation into middle-management master plans and planning, and implementation by the shop-floor, and finally feeding back the results to policy, painfully failed. The absence of bottom-up feedback processes, moving awareness upwards, became clearly apparent. As a frontline professional of the waterboard commented: 'We experienced to be some sort of third organisation, separated from the waterboard, and the municipality' (ibid.: 9).

In sum, the project started with a confrontation between the ascribed coherence of generic water management, of the waterboard; and the emergent coherence of the specific water management of the municipality. In the water management casuistic, we observed a triple movement, which goes by the name of *emergent cluster issues*: on the one hand, the clusters are increasingly unable to exchange knowledge and experience; and, on the other hand, the clusters are far too rigid in themselves. In all clusters, some dare to jump out of the straight jacket of the cluster. Experiential knowledge and know-

ing does not necessarily decline, but it is increasingly locked up in the clusters within the organisation and/or organising of the water management. In addition, I observed that the clusters show a degree of heterogeneity, which resists a homogeneous outlook on the clusters.

Based on these observations, Moorhen Park was devised with the three complexity principles of Morin at the back of my mind. In the first place, as many as possible clusters needed to be brought into contact with each other (*dialogic principle*). In the intervention process Moorhen Park, managers, technological professionals, and frontline professionals participated (see figure 28). The cluster of political governance was absent, for lack of interest. The intervention was therefore organised with the trilemma that organises actual water management. Therefore, the intervention could accommodate short feedback loops between the different clusters. Secondly, to avoid an informal debate *about* urban water management, the dialogues of management were focused on Moorhen park, a small neighbourhood within the municipality. The assumption was that this neighbourhood largely contained the complexities of the whole system (*holographic principle*). Thirdly, moments of difficulty, when the dialogues showed complementary, contradictory, and opposing relations simultaneously, were addressed, and not smoothed over (*recursivity principle*). I will illuminate briefly the three intervention principles.

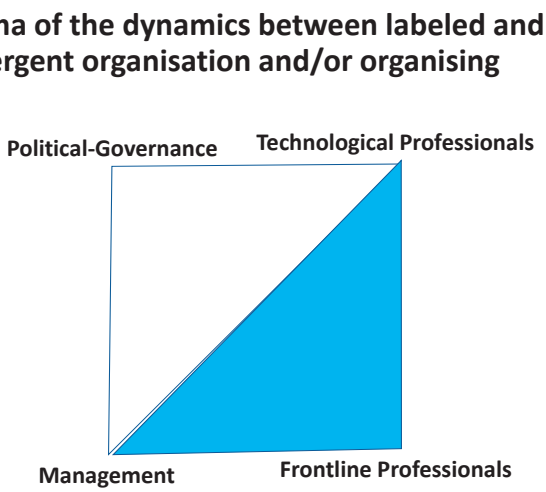


Figure 28

Dialogic principle: Prior to the intervention, an initial narrative has been prepared. Ten stories were combined, told by nine employees of the waterboard (including the dike reeve) and the municipality. Issues were portrayed from different perspectives and participants positions. Relevant representatives from all clusters were interviewed. During the intervention sessions, the initial narratives were elaborated. Each session was

captured in a sequel narrative, thus creating an ever-expanding number of narratives. On the one hand, this provided an important refreshment of memory to the participants; on the other hand, new issues were raised. A narrative method offers the possibility to show the complexities of the gap between the labels of ascribed coherence, and the circumstances of emergent coherence. I observed that the practioners stories amounted to the wish to reclaim their practice by restoring dialogues about the ascribed coherence of the labels and models. Amongst other things, the intervention created awareness for the heterogeneity within the clusters.

Recursivity principle: From time to time, social processes inevitably show the conflict between ascribed coherence and emergent coherence. The interventions I planned made room for such moments of difficulty when the metaphorical elephant in the room sounded the trumpet. The assumption is that emergent coherence is better respected, and adjacent affordances better considered. Thanks to the interventions awareness of emergent coherence were meant to be nourished. Moments of difficulty pry open the dualism of 'either-or' logic. In the Moorhen park interventions, the efficiency of water management was a key issue. And that issue provoked moments of difficulty. I will describe an example. During the last session, participants were asked to provide building blocks for urban water management in general, and Moorhen park. In no time, eleven ideas were voiced and discussed. But the general feeling was that after being preoccupied for such a long time with the issue, that these ideas, however well intended, were a bit halfhearted. A deadlock was apparent and voiced. Suddenly one of the participants walks to the flip-chart and started to sketch. He drew two apartment buildings: one represented the waterboard and the other the municipality. The apartment buildings symbolised hierarchical organisation guided by the ascribed coherence of generic rules, where the different clusters mainly exchange explicit knowledge through reports, tables, formal meetings, and emails. On the ground level, between the flats, outside the offices, the actual water management gets carried out. The ground level symbolised the frontline professionals of both the municipality and the waterboard. And when there were moments of difficulty, it appeared that these employees usually settled it amongst themselves. At the ground level, transactional management was a part of daily practice. Subsequently, the participant sketched the same apartment buildings, showing a different picture. The gap between the intentions and action (ecology of action) was bridged by drawing a collective plan of urban water management – i.e. all clusters and the municipality being involved. This would also eliminate the top-down formalism of generic rules, by exchanging them with a principle-based approach. The sketches did not say much about how the changes should take place, nor at what cost; but they showed how the waterboard and municipality could transform. Through this intervention, the moment of difficulty was transcended, and knowledge and energy flowed again (Cath & Geldof 2015: 40).

Holographic principle: The assumption is that in a small specific local area, a comparable complexity can be found as in the whole. The part (Moorhen park) is in the whole, and the whole (the aggregate of the sphere of activity of the waterboard) is in the part. The question was: how can we manage urban water in that neighbourhood? If you reduce the whole to a small part and analyse it in isolation (reductionism), it will be quite meaningless. Such simplification will at most pay lip service to the ideology of best practices. Once a best practice is established, the assumption is that you can scale up, assuming decontextualised sameness. But if you analyse the sphere of activity (holism), guided by the ideology of efficiency, ignoring the specific and showing little respect for emergence, one gets a stalemate. In reductionism and holism, you lose effectivity and efficiency of action (principle of ecology of action). This reflects the drawbacks of Mode-1 logic, which emphasises replication and generalisation.

Large, drawing table-like views have a strong appeal and offer room to avoid 'moments of difficulty'. The aesthetics of ascribed coherence and the temptations of integral solutions, and the pitfalls of a one size fits all solutions to complex issues, is ubiquitous. Simplification is not tenable; coping with complexity requires respect for emergence.

Concluding Remarks

Increasingly, water organisations, have been subjected to political and managerial control. Politics wants efficiency and a no-risk regime. Politics looks at budgets and is terrified of being caught-out with errors. Managers, promise politicians and their civil servants that they can deliver what is needed. So, they form in principle a complementary relationship, although they do not really trust one another, and that can lead to antagonism. The managers depend on the engineers, ecologists, and other formal expertise to deliver what management promises to politics. The technological professionals mostly feel closer to the frontline professionals-in-practice than to the managers; although the (younger) engineers tend to speak and think in abstractions and not in the concrete language of the frontline professionals or their allies in the head office. But many engineers know that the emergent awareness of water management of the professionals in the field deserves respect. Herein, one can recognise a fourfold dynamic of power, politics, (mis)-understanding and awareness (Cath in Jansen & Letiche 2017: 195).

The complex complementary and antagonistic relationships between the clusters, described in the fourfold trilemma of the dynamics of water management, focussing on the tension between emergent coherence and ascribed coherence, illustrates a process of deepening estrangement. The ascribed coherence of formal organisation and/or organising has little respect for emergence. To some degree, emergence is voiced in the shadow

themes that are present in and between the clusters. Shadow themes are narrated in the stories about emergent processes with which daily water management is confronted. Shadow themes circumvent the ascribed labels and are part of the conversation of the private trusted circle of colleagues in one's cluster or between allies between clusters: 'The distinction between legitimate and shadow themes is intimately related to ideology, which can be either official or unofficial. It is ideology that legitimises a conversation. It is the ideology, sustaining current power relations, that makes conversation feel natural, acceptable, and safe – that is legitimate. (…) Shadow narratives then emerge as strategies organising experience' (Stacey & Mowles 2016: 422).

The shadow is a sort of background that codefines the clusters and in which they got defined. This can be described as the role of veiled organisation and/or organising that holographically effects the formal organisation and/or organising – i.e. presence in absence and absence in presence. It serves to let off steam and provides informal coordination; new initiatives are prototyped and started, and room is created for experimenting with new ideas, practices, attitudes, and identities through the complexity of dialogic recursivity. The shadow is also part and parcel of a crisis in dialogic recursivity in and between the clusters, and in the formal legitimated narratives of the ascribed labels. The cold welds, produced by the flow of interventions, such as mergers, reorganisation, and formalisation, do not invite one to problematise the process of ascription. In the shadow, there is a crisis of the experiential. Emergent coherence calls upon us to share stories about relatedness, which seems to be less self-evident. There is both a crisis of the self-evidence of the ascribed labels and in the difficulties that are presented in coping with complexity. The alternative for relatedness in water management is conflict and mutual marginalisation. The shadow can be read as questioning the relationship between engagement and identification, and the rationalising distancing that formalisation produces in identity and engagement.

A triple movement can be observed: on the one hand, the clusters are increasingly unable to exchange knowledge and experience; and, on the other hand, the clusters are locked up, in themselves. In all clusters, some dare to jump out of the straight jacket of their cluster. Experiential knowledge and knowing does not necessarily decline but is increasingly locked up in the clusters. On the one hand, a cluster can, to some extent, avoid the ascribed coherence of the organisation, by trying to live its own ascribed coherence while showing some respect for emergent coherence. On the other hand, the clusters diverge. In addition, there are shadow processes in place that try to respect experiential coherence, by avoiding the organisation's labels as much as possible and even sometimes the ascribed coherence of one's own cluster.

In sum, the boundaries between the clusters cannot be rigidly specified, but within each cluster, one finds a way of looking at water management that is typical for that cluster, but less obvious for the other clusters. The water organisations I have studied still

possess resilience and a certain 'organising' ability. Problems that might arise from the bracketing of experiential knowledge are still addressed because people find each other in the shadow processes. In these shadow processes, one can hear grumbling, but also see actions that are hidden from the view of the formal organisation and/or organising. These actions are undertaken based on the conviction that specific and sometimes urgent situations demand it, and common sense indicates adjacent affordances – i.e. some persons appear to be able to recognise other opportunities that escape the ascribed coherence of the drawing board realities. However, the question is how long this emergent organising ability will hold against the prevailing ascribed coherence of ever-increasing efficiency. Experiential knowledge and coherence increasingly encounter difficulties to flow and be shared (Cath et al. 2010 & Cath et al. 2011).

If ongoing dialogic about emergent processes is held up by the preponderance of ascribed coherence, the experiential knowledge-in-practice gradually will wither. If emergent water management is confined to the safety of shadow themes within the limits of one's cluster, then the challenges of ongoing complexifying that require multi-cluster experiential knowledge, will be hard to achieve. This poses new challenges for water management. Shared experience and shared experiential knowledge, embedded in the stories that buttress organisation and/or organising, act as the proverbial glue in, and between the clusters, as a language that people share (Cath et al. 2011: 54).

This ends the quest in Morin's Complexity Edifice. In the last, concluding, chapter I will reflect on what I have found and what this might mean for organisational theory and practice that respects emergence.

Chapter 8

Solace in Complexity

Of course, my path has elaborated a method consistent with complexity. Such a method has nothing to do with what is called methodology. A methodology defines a specific work programme which is fixed once and for all. My method wants to be an aid to the mind so that one confronts the complexities and develops one's strategies. Hence my formula: 'Help yourself, complexity will help you'. (...) All complex knowing has a part of the irremediable uncertainty that must be recognised and admitted. Complex thought involves the realisation of the incompleteness of knowledge and, more fundamentally, a limitation of the possibilities of the human mind. It would be futile to seek absolute and unmistakable foundation.

Edgar Morin (2008b: 230-231).

Did we explain Miracles? No. We just explained why they often seem like such a surprise when they occur. The same can be said for nasty surprises. If emergent coherence means anything, it entails having the confidence to take next actions. If the coherence is solid and the affordances are right, miracles may happen. So too do nasty surprises. If coherence is absent … anything can happen. The financial crisis and the housing bubble are examples of just that. Our managerial takeaways are simple: dialogue not category, experience not ascription, sagacity not check-list. Experienced emergent coherence will bring you into genuine contact with yourself and circumstance. That is a miracle enough. One thing about miracles and nasty surprises -- they lend themselves to great narratives. That story-telling can lead to dialogue, and to emergent coherence.

Hugo Letiche & Michael Lissack with Ron Schultz (2011: 256).

Harvest

Each chapter of this book has started with a few quotes. The reader is invited to interpret these quotes as a metatext. The quotes offer some footing as a holographic structure and conduct mutually recursive dialogues. The quotes summarise the book and simultaneously stand alone. One of the most common questions in organisations is: what does it yield? This question can be asked in advance: what is it going to yield? The question can also be asked in retrospect: what did it yield? Often 'it' is indeterminate, taken for granted, left unproblematically. The questions deny and imply emergence simultaneously. The yield question is rarely posed *in* the action, i.e. the experienced time between before and after. This book is about that momentum: the emergence of emergence.

In this concluding chapter, I will firstly revisit Morin's Complexity Edifice. Next, I will discuss the watershed, which becomes apparent on the second floor (self-organisation), between theoretical concepts that enable us to create awareness of emergence (third and fourth floor) and the ground floor and the first floor, which prevent such an awareness. Then, I will discuss correspondence and difference in conceptualisation between Morin and Letiche & Lissack, followed by a reflection on the casuistic in relation to the dialogic square. I will end with four guiding principles, which I have gathered from my practice, that may be helpful in coping with complexity.

Morin's Complexity Edifice Revisited

Morin's Complexity Edifice is a hitchhiker's guide to different theoretical concepts that are developed in the context of thinking complexity (see figure 29). The ground floor, which consists of the mechanistic worldview of Taylorism is complexified by first-order systems theory (see figure 30). The concept of feedback loops breaks open the closed order of the ground floor by introducing a two-fold logic of 'either-or'. A simplification that we can observe in the central concept of the simplicity paradigm, which informs the dominant management discourse: the 2x2 Matrix. The 2x2 Matrix is composed of two dilemmas, setting up analysis in four quadrants. There are only room for two opposing factors and/or ideas.

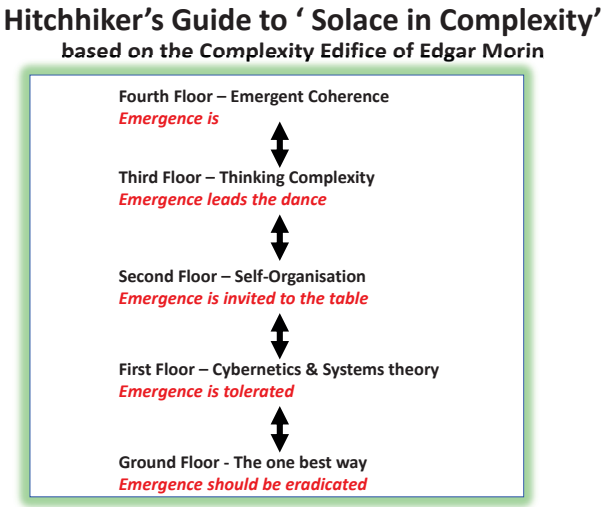


Figure 29

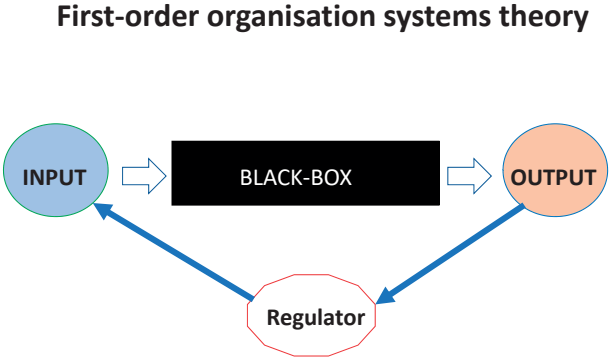


Figure 30

Simple contextualisation, through opposition, only allows for dualism. This means that context is not emergent but pre-given, which leads to the blindness of repetition and sameness in analysis and action that is observed in the vicious circle of the dominant management discourse (Stacey 1996).

In sum, first-order systems theory largely denies emergence. The black box is filled with different management recipes, some of which I mentioned in chapter 4. Recipes that are incapable of coping with complexity simply because they are rooted in the notion of ascribed coherence as an input and output signal, which are linked with each

other by external auditing through feedback. The observer is neatly separated from the observed, asserting that emergence can be controlled.

On the second floor, the question is raised: what is really going on in the black box? This initiates the complexifying move towards second-order systems theory, which prioritises the organising concept of self-organisation. Emergence is invited to the table. In chapter 5, I discussed and problematised this concept. It is an old tradition in management sciences to introduce concepts from the natural sciences. Self-organisation is one of them. The concept of self-organisation is founded on nonlinear deterministic modelling. The translation problem is raised by the metaphorical nature of self-organisation (butterfly effect), and aggregation level differences between self and organisation, which are ignored. What might work in the experimental context of the computer simulation (the lab), cannot, unproblematised, be translated into the real world. Self-organisation is then presented as a two-fold logic. In this logic, self-organisation can be understood as self-generating and independent of self. Self-organisation then lacks reflexivity and consciousness – i.e. self-organisation is primarily determined by organisational process, i.e. self that is organised by organisation. But, self and organisation should be understood at different aggregation levels (Letiche et al. 2011).

In Morin's self-eco-[re-]organisation concept, a three-fold logic is introduced, whereby the dualism of self-organisation is complexified. This move liberates the self-organisation concept of its dualistic footing, therefore making room for reflexivity, strong contextualisation and awareness. In the words of Morin: 'Disorder contributes to the generation of organisational order. Simultaneously, disorder continuously threatens organisation with disintegration. This threat arrives from the environment (accidental destruction), and/or from within (growth in entropy)' (Morin 1990: 186). Letiche & Lissack complexify Morin's trilemma Self-Eco-Organisation by relating complex processes to emergence. Both Morin and Letiche & Lissack relate various factors (self, organisation, environment) to dialogic, emergent relations that are complementary, contradictory, and opposing. The move towards the third and fourth floor of Morin's complexity edifice is made possible through the generation of complexity principles that (might) create better awareness of emergent processes.

My first assumption in this book was phrased as follows: organisation and/or organising is emergence; organisational studies are the study of emergence. And because organisational studies study emergence badly, trying to ignore and/or deny it, organisational studies make a mess of it - i.e. the use of an inadequate and false epistemology dooms the field (research) to inaccurate, incomplete, and inadequate thought. At most, mainstream organisational studies address complicatedness, which tries to domesticate emergence – i.e. try to make it a predictable entity, which is a contradiction in terms. Another paradox was introduced: most mainstream management textbooks start and

end with the observation that the world they try to describe is complex. Also, managers and governance repeatedly state that the issue at hand is complex while acting as if it is a complicated problem. In this study, I tried to show that it is not malicious unwillingness that prompts mainstream organisational studies to refrain from addressing its false epistemology, which denies emergence. Informed by Morin, Letiche & Lissack and Stacey & Mowles, I have argued that an epistemology that is founded in first-order systems theory (first floor of Morin's complexity edifice), in other words, that argues in a two-fold logic, is incapable of creating awareness of emergent processes. In addition, I have argued that the complexity concept of self-organisation, in the restricted sense, is based on nonlinear deterministic systems theory. It does a better job in creating awareness of emergence, but it is still inadequate to develop an understanding of emergence. Also, the restricted version of self-organisation is founded on a two-fold logic that denies the difference in aggregation levels between self and organisation.

A watershed in Morin's complexity edifice rotates around the complexity concept of self-organisation. Morin's self-eco-[re-]organisation trilemma breaks open the dilemma of the restricted notion of self-organisation, thus giving room for Morin's complexity principles (third floor of Morin's complexity edifice). Finally, I have added a provisional fourth floor, which is under construction, to try to further enhance awareness of emergence through the possibilities that the dialogic square might offer. I will now reflect on these multi-fold logics.

Three-Fold Logic: Trilemma

The dilemma I have pointed to is that the notions of 'either-or' or 'both-and', which are grounded in thesis-antithesis, and are a principal idea of Mode-1 knowledge production, exclude ambiguity and by that emergence. The consequence of this view is that a Mode-1 position pushes aside a Mode-2 position, and denies the Mode-3 position – i.e. trying to understand emergence, requires at least a three-fold logic (trilemma). Morin's 'ecology of action' principle, which states that intentions and the actions that follow are contextualised by Self, Group, Environment (self-eco-[re-]organisation) in a three-fold logic, requires recursive causality as opposed to the linear causality of the binary position. The dilemma of the opposition thesis-antithesis, which unites on a higher-level aggregation level (synthesis), is that it denies the complex dialogic between complementary, contradictory, and opposing relations, and shows little respect for differences in aggregation levels. It leaves next to no room for complex thought. First order systems theory does break open the closed order of the mechanistic world view, but it cannot clarify emergence – i.e. its object of study is complicatedness, which is rooted in a quest for certainty.

The three-fold logic of the trilemma opens the 'either-or' simplification. A trilemma contextualises the dichotomy by adding a third factor. Contextualisation is the footing of complexifying processes – i.e. contextualisation breaks open simplicity, and consequently enhances awareness of emergence. Consciousness supports the second floor of Morin's complexity edifice. Consciousness should be understood, according to Morin, in its double meaning: awareness and ethics (Morin 1990, 2004). An adjacent factor, logically, is reflexivity. Three-fold logic implies dialogic recursivity of three-fold complex relations, which try to prevent trilemmas to relapse into three dilemmas. Morin distinguishes eight avenues that underpin his three main complexity principles, helping to cope with complexity (Morin 1990: 163-180). I summarise Morin's eight avenues as follows.

Eight avenues to the 'challenge of complexity'

- Chance and disorder are irreducible; they are entailed in uncertainty that should be considered as an active agent in the real.
- We cannot chase off singularity, the temporary and the local, by abstract universalism, we must relate to it.
- The problem of complicatedness popped up with the complexifying observation of the interwovenness of biological and social phenomenon, which cannot be reduced to numerical computation.
- In the trilemma order-disorder-organisation, the terms have a complementary and antagonistic relation.
- The organisational principle of Unitas Multiplex informs us that one cannot dissolve the multiple in the one, nor the one in the multiple. This leads to the notion that a system is simultaneously more and less than the sum of its parts. Organisational complexity acts on different aggregation levels.
- There are three interrelated organisational complexity principles: (1) *Dialogic interaction* of order and disorder in the interplay of complementary and antagonistic relations; (2) *recursive causality* through social processes of ongoing productive feedback loops; and (3) the *holographic structure* of ongoing processes of 'absence in presence' and 'presence in absence'.
- A self-organised system cannot be isolated from its eco-organisation (environment). Systems are closed (autonomy) and simultaneously open (ecology). Words can and cannot be separated from text, text can and cannot be separated from context.
- The integration of the observer/conceptualiser (subject) in the observation and concept (object), prevents the mutilation of the object and gives room for the con-

> text to speak back to the observer/conceptualiser. This corresponds with recursive holographic principles. In Morin's wording: 'any theory should render an account of that what makes the production of that theory possible, and when this account cannot be given, the problem it addresses remains an assumption' (ibid: 173). This reverberates in the concept of contradiction that is epistemologically understood, in classical logic, as an alarm signal of error. The binary logic of the dilemma is challenged in complexity theory: 'In other words, for reasons of logic, we arrive at this logic absurdity where time is born in non-time, space in non-space and energy out of nothing. The dialogue with contradiction is open. We are urged to establish simultaneously a complementary and contradictory relation between the fundamental notions that are necessary for us to appreciate our universe' (ibid.: 174).

In sum, Morin argues for irreducibility of relatedness. Thinking complexity is a plea for the reciprocal irreducibility of disorder and order, of parts and whole, of complexity and complicatedness, of three-fold logic and two-fold logic, of diversity and unity, of different aggregation levels, of self-eco-(re-)organisation and self-organisation, of subject and object. Dilemmas are transformed into trilemmas through interaction (emergence), which is characterised by recursive, organisational, emergent, relatedness. In other words, order and disorder produce each other emergently, and thus offer possibilities for organisation; complexity produces complicatedness as complicatedness produces complexity; the observer (subject) produces the observed (object) as the observed produces the observer. Ascribed coherence (labelled reality) produces emergent coherence (experienced reality), as emergent coherence produces labels.

Four-Fold Logic: The Dialogic Square

In both cases, the Tranchée story and water management casuistic, I discussed the interplay of four trilemmas, which I constructed, guided by the dialogic square. I will reflect on this casuistic in relation to the dialogic square further on. If I would draft the basic dialogic square of Self and World as a 2x2 matrix, it would be reduced to two dilemmas, instead of six possible relations between the four factors (see figure 31). In this two-fold logic, I have created four quadrants. Quadrant A could represent self-organisation, as an expression of the degree of relatedness between the individual and the organisation. Quadrant B could represent experienced coherence as an expression of the degree of individuals coping with complexity. Quadrant C could represent strategy/strategising or the degree of coping with the environment. Quadrant D could represent emergent weak signals that invite adjacent affordances in the environment.

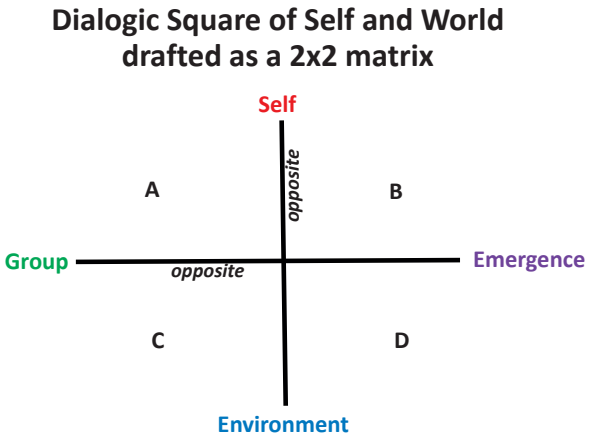


Figure 31

I repeat this exercise with the water management case (see figure 32). The four factors of the dialogic square of water management are now represented by two opposing axes (2x2 matrix), instead of four trilemmas in six complex relations. Quadrant A represents the organisation and/or organising of water management by politicians and managers. Quadrant B represents water management characterised by mutual marginalisation and distance between politicians and frontline professionals. Quadrant C represents rationalised water management by managers and technological professionals. Quadrant D represents the practices of water management on different aggregation levels. The problem that comes to the surface, is that the quadrants are alien to each other. The quadrants can only show a specific, largely decontextualised, part of the casuistic. The two-fold logic of the 2x2 matrix excludes recursive dialogues among the quadrants, favouring an 'either-or' rhetoric, by a lack of complex relations between the four factors – i.e. choosing one quadrant, implies the exclusion of the other three quadrants, thus marginalising emergent multiplicity. All the issues I raised, in relation to 2x2 matrixes in chapter 4, are implied.

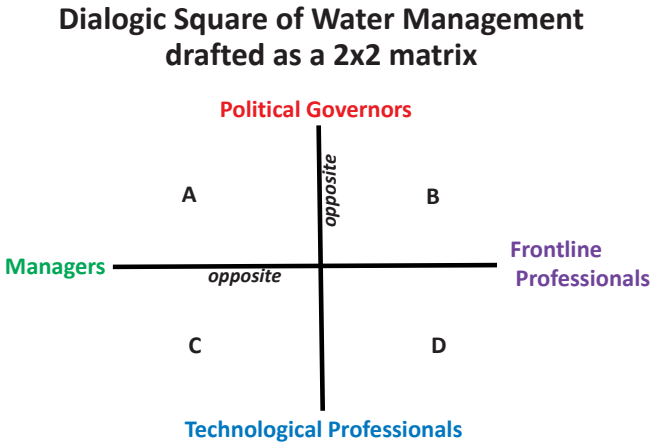


Figure 32

As discussed above, in a three-fold logic, breaking up the two-fold logic of dichotomy, both complementary and antagonistic relations are respected between the factors. The four-fold logic further complexifies the three-fold logic. The casuistic showed that it is highly exceptional that all four factors simultaneously show coherence – i.e. a four-fold logic is very unstable. A four-fold logic broadens the possibilities to enhance awareness of emergent processes, emphasising strong contextualisation. The four-fold logic also elucidates the importance of aggregation level difference (holographic complexity principle). In the dialogic square, the singular of experienced coherence by Self shifts to the plurality of shared coherence of Group (organisation). In the wording of Letiche & Lissack: 'Personal or experiential familiarity of self, existence, and world is what is meant here by experienced coherence. Similar but also profoundly different is the world of language, meaning, and signification as rendered in attributed coherence (…) There are opposition and relationship, but not dualism. (…) The shift in aggregation level from singular to plural creates a difference in kind, but it is also a relationship' (Letiche et al. 2011: 20-23). This prevails for all relations, which thereby cannot reduce the factors to simple dualities, as the 2x2 matrix asserts.

Repeating patterns of Self-Other-Group, in which emergence is left out, are emphasised in first-order systems theory, which informs the dominant management discourse (ibid.: 230-231). The rabbitduck shows that ignoring or denying emergence does not make emergence disappear. This reminds us of the Cynefin Framework, where 'simplicity contextualisation' and/or 'complicatedness contextualisation' can suddenly shift to chaotic or complex contexts. We observed in the water management case, and in the analyses of the Tranchée story, that the differently identified trilemmas flipflop in

rabbitduck foreground-background interplay. This shows the dialogic relatedness of the trilemmas in their recursive holographic choreography.

A rabbitduck-like absence in presence and presence in absence, flipflopping foreground and background of trilemmas, in my interpretation, is an essential characteristic of the dialogic square, which thus tries to improve awareness of emergent processes. The two-fold logic of the 2x2 matrix ignores the presence of other possible trilemmas; at most the shadow of other trilemmas is observed as annoying, as something that should be controlled. In other words: awareness of emergence is impossible in a two-fold logic.

A two-fold logic can only show overdetermined evidence without context, as in the figure of the dialogic square of the dominant management discourse and its shadow (Figure 33). The trilemma of Self-Organisation-Environment is reduced to the two-fold logic of Self-Organisation (ascribed coherence of organisation and/or organising), or Self-Environment (emergent coherence), or Organisation-Environment (strategic ascribed coherence). This trilemma has a shadow trilemma: Organisation-Environment-Emergence, which is ignored, as the other two trilemmas (Self-Environment-Emergence and Self-Organisation-Emergence) are ignored. An example of such an analysis is the 2x2 matrix of SWOT analysis, where two dilemmas shape four prescriptive quadrants (see chapter 4). Internal strengths and weaknesses are confronted with external threats and opportunities. Then, attributed key issues, are confronted with the internal and external factors. Finally, strategic options are ascribed and implementation follows, in denial of the ecology of action. In a dim and distant past, when I conducted SWOT analysis with groups of employees, I always experienced a resigned attitude of the participants, while filling in the obligatory checklists. The workshops became very lively when the factors and issues were dialogued, but became a dead place, when the dialogic had to be squeezed into the quadrants. I will return to this further on when discussing the dialogic square in relation to casuistic.

Dialogic Square of the dominant management discourse and its Shadow

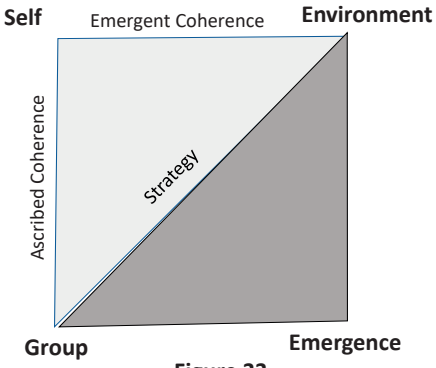


Figure 33

Letiche & Lissack distinguish thirteen critical takeaways that might be helpful to cope with complexity. I prefer to name the takeaways guiding principles (Letiche & Lissack 2011: 255-256).

Critical guiding principles of coping with complexity

1. If it can be summed up in a label, it probably has little respect or room for emergence.
2. Respect implies an expectation of repeated interaction. Self / Group relatedness entails respect.
3. Ascribed coherence does not see the complexity in the material / biological / social environment.
4. Ascribed coherence and retrospective judgments give way to labels and categories.
5. Experienced emergence produces emergent coherence.
6. To treat an affordance as ascribed (i.e. as a code) instead of as experienced (i.e. as a cue) is to risk missing most of the properties afforded for possibilities and next actions.
7. Difference and similarity, ipso and idem, are complementary. Dialogue needs them both.
8. The retrospective judgment of ascribed coherence focuses too much on sameness and similarities at the expense of contextual differences and emergence.

9. Homologies and narratives built around them are capable of far deeper resonance than stories built around labels and categories. They can evoke affordances across contexts, situations, and possibilities.
10. Emergence can be accommodated and embraced by homology based narratives, while it is resisted and repulsed by category based stories.
11. Revere your simulacra – they (re-)present emergence's possibilities, opportunities, and creativity.
12. Be suspicious of the efficiency of labels and categories; ignore at your own risk the resilience and sagacity of homologies and dialogue.
13. Four-fold logic (as in the dialogic square) makes room for emergence. Such thought honors rather than stifles experience.

In sum, Letiche & Lissack argue for emergence as an ontological quality – i.e. (re-)spect for emergence is in the foreground and to be understood as relatedness in emergent practice. Emergence can only be experienced in the possibilities of action, not in the prescriptions of labels, nor retrospectively. Emergence entails strong contextualisation through narratives and stories about lived emergence. Simulacra are constitutive qualities, supposing that they are dialogically related in a four-fold logic of Self-Group-Environment-Emergence and understood in their complex relatedness.

Squaring the Trilemma of Emergence

The above mentioned eight avenues towards understanding complexity and the 'takeaways' of Letiche & Lissack show correspondence and difference. What is the dialogic recursivity of the complexity concepts of Letiche & Lissack in relation to Morin?

Morin's complexity concepts should be understood as meta-theory. Complex thought is conceptualised in terms of the complexity. Morin thinks the nature of nature, the humanity of humanity, and the consciousness of consciousness, and so on and so forth. I assume that his sociological/anthropological participative fieldwork before he drafted Method, is an important precursor to his complexity theory. Morin's thinking of complexity is largely unrelated to practice and organisational theory. In contrast, the complexity concepts of Letiche & Lissack are born in practice and reflect on practice, in the context of organisation and/or organising. They largely ignore mainstream organisational theory.

Emergence marks both complexity theories, and both theoretical frameworks emphasise social relation. In Morin's epistemology, emergence is a constitutive force that organises both order and disorder. According to Letiche & Lissack, emergence can only be understood as relatedness between self and world, and not as a metaphysical or

epiphenomenal quality. In Morin and Letiche & Lissack logics, irreducibility is central to the epistemology. For example, emergence cannot be reduced to complicatedness, parts of a system cannot be reduced to the whole, or vice versa. Consequently, both logics assert the importance of aggregation level differences – i.e. different aggregation levels cannot be reduced to each other, but are nonetheless related in difference: the holographic principle denies reductionism and holism. Therefore, a one-part logic (A=B) or a two-part logic (different factors produce a single coherent result) cannot understand emergence (Letiche et al. 2011: 180-182). Both epistemologies introduce three types of complex relations that emphasise the complex relatedness of their factors. Factors, nor relations, should be observed in isolation, but are at the same time irreducible to each other. Both complexity views emphasise that foreground and background should be kept in dialogic recursivity (rabbitduck principle).

Both complexity theories partake of Mode-3 knowledge production. Both plead for humanisation of organisation, organisation with consciousness, or, in the wording of Morin, a process of hominisation. Letiche & Lissack emphasise the emergent dimension of coherence and the reconciliation in difference (complexification) with ascribed coherence. Morin & Kern observe that 'the renewal and complexification of the past/present/future relation should consequently be recognized as one of the goals of hominisation' (Morin & Kern 1999: 87); whereby the key issue of hominisation is to address: 'mental underdevelopment under the primacy of rationalization, quantification, abstraction, irresponsibilization, which together instigate the development of moral underdevelopment' (ibid.: 84). Morin's complexity theory is footed in a transdisciplinary meta-theory about *phenomena*, while Letiche & Lissack theorise *within* phenomena while trying to think complex practice. Morin stays largely mute in terms of action perspectives, while Letiche & Lissack try to formulate conditions for action, informed by complexity theory. Morin thinks transdisciplinary complexity, Letiche & Lissack think *social* complexity – i.e. they both ignore the nonlinear determinism of the natural scientific conceptualisation of complexity as informed by computer modelling; modelling that in the context of the social may, at the most, produce compelling metaphors. On the one hand, Morin's and Letiche & Lissack's views on complexity resonate with each other, on the other hand, they differ in conceptualisation (e.g. three-fold logic and four-fold logic) and contextualisation (e.g. orientation towards the practice-based social).

Both Morin's and Letiche & Lissack's conceptualisations of emergence refuse to compromise or intermingle the epistemology of complexity with that of simplicity - i.e. to synthesise complexity on a higher aggregation level.

What Can We Learn from the Cases?

Both the Tranchée and the water management case were studied from the perspective of whether the dialogic square can enhance awareness of emergent processes. In other words, is it possible, guided by the square, to improve understanding of emergence? The adjacent question is: can the improved understanding be helpful in the practice of studying and consulting on complex issues in an organisation and/or organising. In this study, the dialogic square has been developed in the context of the coherence conceptualisation by Letiche & Lissack, and the complexity principles of Morin. I will first return to the Tranchée casuistry and then discuss the water management case.

The Tranchée casuistic is a microhistory told from one perspective: the artist (Self). It is a reflection that stories the emergent processes of organisation and/or organising in the making of an artwork. The story was told to me in bits and pieces and then written down in the aftermath of the project. Later, I analysed it, guided by the dialogic square. I have discussed the project several times with Marc Higgin, who participated in the project as a personal assistant to the artist, and as an anthropologist, who researched the project for his doctoral thesis. The Tranchée narrative is a reflection from one perspective, which reads to the perspectives of others (collective, artistic ideals, and emergence of Tranchée). As I mentioned before, the story is very helpful, because it shows lived emergence, the object of my research. I used the story to analyse whether the dialogic square can be a successful guide to understanding emergence in comparison to other known frameworks originating in organisational theory, which are largely based on two-part logic.

The Tranchée casuistic shows how the artistic ideals of the artist, which put emphasis on emergent coherence, clashed several times with the different labels of a heterogeneous public. I put the three-fold logic of the trilemma Self-Collective-Emergence (of Tranchée) in the foreground. But we also witnessed that other trilemmas interfered and temporarily took over in the different phases of the project. From an organisation and/or organising perspective, the project had four distinguishable serial phases that were meaningful, showing changes in aggregation level. The artist felt most comfortable in the phase of making the artwork. In that phase, the trilemma Self-Artistic Ideals-Emergence (of Tranchée) was in the foreground. This was the phase where the factor Collective was present in absence. The Tranchée story showed that the relation between the factor Self and the factor Collective (organisation) was dynamic. From one moment to the next, the relation shifted from complementary to antagonistic and vice versa. This dynamic could also be witnessed in the relations between other factors in the trilemmas. The emergent process showed that the relations between the factors were not fixed as in a 2x2 matrix. A linear design (digging the trench, making of the artwork, building the kiln, firing the kiln) could have been described in a detailed project plan as an expression of

ascribed coherence. Such a detailed plan was absent in the project. Referring to Morin's avenues of the 'challenge of complexity' and the 'takeaways' of Letiche & Lissack, I observe that the guiding principles were largely respected in the project. For example, the organising principle of disorder, recursive causality through ongoing feedback loops, and the holographic principles of ongoing processes of 'absence in presence' and 'presence in absence' can be observed. An analysis with a four-fold logic makes room for awareness of (lived) emergence. The factors in the complex relations show the recursive holographic structure of the story – i.e. the factors are irreducible to each other. The casuistry showed that a two-fold logic does not stand when confronted with emergence.

In chapter 7, in relation to the water management casuistry, I discussed my ethnographical data, (re-)framed by the dialogic square. In contrast to the Tranchée narrative, the water management case is studied from different perspectives (factors), to find out whether the dialogic square can be useful in creating awareness for emergent processes on the mesolevel (organisation). In relation to the Tranchée narrative, I have argued that a two-fold logic (2x2 matrix) cannot create awareness of emergence and asserted that a four-fold logic is better capable of that. The question is, whether this assertion is tenable on a mesolevel, with multiple perspectives. I assume that on the mesolevel, compression of data is unavoidable, and reification lies in ambush. The assumption is, that a two-fold logic cannot avoid reification and that a fourfold logic is able to avoid that pitfall as much as possible, since a fourfold logic better respects emergence.

The water management case was researched from the perspective of emergent coherence. The assumption was that marginalisation of experienced knowledge would hamper coping with complexity. In other words, disrespect for emergence, giving way to the labels and categories of ascribed coherence, prevents coping with complexity: 'Ascribed coherence does not see the complexity in the material/biological/ social environment' (Letiche et al.: 255). As I have mentioned above, framing the case in a two-fold logic decontextualises the factors and thus largely discusses ascribed coherence. In the case, I described emergent processes on the mesolevel of four clusters. Individual stories, about Self-Organisation-Environment-Emergence, were reified into narratives of clustered organisation and/or organising. In other words, cluster identity replaced identity of Self. The case describes a recursive holographic structure of water management. For example, a waterboard can be described as a whole (system) of which the clusters are a part. The waterboard is, in turn, a part of the Dutch water system, and the Dutch water system is a part of the European water system. These different aggregation levels are meaningful; they matter – i.e. the holographic principle asserts that a frontline professional's sphere of action is indirectly related to the mentioned different aggregation levels. Generic European codification of water management trickles down to generic national codification, which trickles down to the waterboard, which trickles down to the cluster, which

trickles down to the professionals. The holographic principle offers a double denial of simplicity: one cannot describe the whole in isolation of the parts (holism), and one cannot describe the parts in isolation of the whole (reductionism).

Complexity favours strong contextualisation, showing the complex relations of the parts and the whole. The kitchen-table management of small-scale traditional water management left a lot of room for the cues of emergent coherence. Codification of ascribed coherence was present in varying degrees. This produces miracles and nasty surprises. To minimise the latter, emphasis has been put on the rationalisation of water management, which produced a focus on large-scale drawing-table planning and management. The resulting complexification of water management, by adding several aggregation levels (scaling up, integration of different spheres of knowledge, multiplication of spheres of activity), has produced new levels of complicatedness (cold welds). While trying to cope with complexity, emergent issues between functional clusters were recursively produced. The dialogic square enabled me to describe these processes, showing the part-whole dissociation of the clusters. In this respect, the dialogic square defies the two-fold logic of 'either-or' simplification: either kitchen-table or drawing-table. Both tables produce their own simulacra, but when kept separated, in denial of the dialogic principle, the gap between their different realities results in the experienced separation of intention and action (ecology of action principle). Drawing-table ascribed intentions and actions, may only be meaningful in stabilised contexts; while kitchen-table emergent intentions and actions, may be meaningful in stabilising the context. The guiding principle 'revere your simulacra – they (re-)present emergence's possibilities, opportunities, and creativity' (ibid.: 256) is correct, but especially if the dialogic, recursive, and holographic principles are respected. The water management casuistry described the marginalisation of emergent coherence leading to expanding, emergent issues, in and between clusters.

In sum, the four-fold logic of the dialogic square is helpful in creating awareness of lived emergent processes on the micro level, as shown in the Tranchée case. But it remains largely mute on understanding ascription – i.e. there is no organisation and/or organising theory linked to the presented ethnography. On the other hand, the dialogic square does show that the two-fold logic of first order organisational theory based on ascribed coherence, leaves us empty-handed when trying to understand emergent processes. The water management case, analysed with a four-fold logic, creates a degree of conceptual awareness of emergence, but largely leaves us empty-handed in respect to lived emergent processes (ethnography). Both cases show that a three-fold and/or a four-fold logic is a meaningful starting point for creating awareness of emergence.

The dialogic square is not a new recipe that facilitates, or even worse instrumentalises, emergence. The square is a tool to create awareness of emergent processes. Consequently, the use of the dialogic square requires respect for complexity theoretical concepts – i.e. a three-fold and/or four-fold logic should be respected in three-fold and

four-fold complex relations. The dialogic square requires a Mode-2/Mode-3 knowledge production position. It is a guide that contextualises knowledge with consciousness in a fourfold-logic. Consequently, the factors and complex relations are irreducible to each other.

The dialogic square requires perseverance and resilience. The object of study has become ongoing emergent processes in practice. Consequently, it is helpful to improve understanding of such processes, and this could prove its usefulness *in* practice. This means that the dialogic square could be a useful guide to open reflection on issues of practice by enhancing contextualisation and reflexivity. I note that I have never applied the dialogic square *directly* to existing issues. This should be the object of further research.

Finally, the dialogic square is not a guide to practice or a checklist. I repeatedly have observed that well-intentioned guidelines and protocols that were meant to enhance dialogues, in practice, were used as a checklist at the beginning and the end of a (research-)project. Consequently, dialogue was ignored, and contextualisation and reflexivity were a negligible factor – i.e. principle-based guidelines easily transform into a rule-based checklist (Kunseler 2017: 51-53; Petersen et al. 2011). Codification advances formalism, armed with ascribed coherence; reflexivity, ethics, and contextualisation, in other words, all the recursive dialogic principles are pushed aside. Researching existing complex issues in practice, guided by the dialogic square, would create better awareness of emergence.

I will elaborate on these issues in the next section, in which I will discuss four guiding principles that may be helpful in coping with emergence.

Four Guiding Principles for Coping with Complexity

The starting question, which guided my research of social complexity, is to be phrased as follows: How can I, informed by complexity principles, improve awareness of emergence? In this book, I tried to unwrap the black box of emergence as far as possible. This is a quest that resembles squaring the circle of the unknown and the unknowable. I hitchhiked through the avenues of Morin's 'challenge of complexity', and tried to think, guided by the dialogic square, how the assertion of Letiche & Lissack that complexity is the biggest unmet challenge of managers, could put meaning to my practice – i.e. how can I transmit the intellectual horsepower of complexity concepts to the wheels of practice. In addition, in practice, I am repeatedly confronted with managers and professionals, who are two-faced in relation to complexity: on the one hand they acknowledge the complexity of issues; on the other hand, while trying to cope with complexity, they beat a hasty retreat to recipes informed by simplicity and simplification (complicatedness). I have argued that the watershed between simplicity and complexity, which

becomes visible on the second floor of Morin's complexity edifice, does not allow for such fudging. To recall the quote that is attributed to Einstein: we can't solve problems by using the same kind of thinking we used when we created them.

How do Letiche & Lissack try to adapt the dialogic square to make awareness of emergence possible? How can we respect ascribed and emergent coherence and acknowledge their difference? In my fieldwork in practice, I found four guiding principles that might be helpful. An important lesson was confirmed in my research: that at least a three-fold logic, which respects complex relationships (complementary, contradiction and opposition), is required to be able to create better awareness of emergent processes.

I have distilled four, interrelated, process conditions for coping with complex issues from my research (Cath & Geldof 2015: 39-45).[52] Emergence is irreducible to complicatedness; emergence is about relatedness and its stories told about relatedness. Emergence has no end-state, there is no solution to emergence, but it can propose adjacent affordances to act upon. Emergence is marked by both closure and opening (Morin 1977/1992). Researching organisation and/or organising, these guiding principles can provide a coherent framework, which can be helpful to create awareness for emergent processes. This observation supports the assertion of Letiche & Lissack: 'By having the square to refer to, the participants have some sense of boundary, some positioning of figure and ground, and a reminder that no one aspect should be emphasized at the expense of ignoring others' (Letiche et al. 2011: 247).

Four guiding principles for coping with complexity in organisation and/organising:

1. **Dialogic Interaction:** this principle refers to the organising force of interaction between order and disorder. Disorder makes room for novelty pointing to adjacent affordances in the environment; underlining the importance of narrative and storying about the complex relations between self, group, environment, and emergence.
2. **Recursive Causality:** this principle refers to the process in which cause and effect produce each other; stressing the emergent interwovenness of cause and effect. The observer and observed can show complex relatedness in contextualisation. Moments of antagonism and paradox make room for novelty in organisation and/or organising, and create awareness of adjacent possibilities.
3. **Holographic Structure:** this principle refers to the importance of aggregation level differences. Neither reductionism nor holism, respects differences in aggregation level. Self-Eco-[re-]organisation respects the constitutive force of emergent pro-

[52] These process conditions are a reconceptualisation of comparable conditions found in research done by Albert Cath, Govert Geldof, Gijsbert van der Heijden, and Roel Valkman. I reconceptualised the conditions using the three complexity principles of Morin; the concepts, and the dialogic square of Letiche & Lissack.

cesses. Difference in aggregation levels can make room for emergent coherence in organisation and/or organising, creating awareness of adjacent aggregation levels.

4. **Ecology of action:** this principle refers to the complex relations between intentions and actions. Intentions, and thereupon based actions cannot be observed in isolation, as two-fold logic asserts. The importance of strong contextualisation, reflexivity, polyphony, and consciousness, requires a four-fold logic, such as the dialogic square. Ecology of action can make room for awareness of emergent processes.

Emergence = 42

Emergence doesn't have anything to do with transcendent qualities but is all about relatedness (Letiche et al. 2011; Morin 1977/1992, 1990, 2008). The three complexity principles of Morin, and the concepts and the dialogic square of Letiche & Lissack, assume this. Emergence implies that coping with complexity is an ongoing process. Another implication is that my quest for emergence remains incomplete. Emergence is like a tablet of soap: the moment one thinks to come to grips with it, it darts off, and one is left with traces of foam. Does this imply that (studying) emergence hardly has any significance for practice? Should I declare defeat, and return to the second, self-organising, nonlinear deterministic floor of Morin's complexity edifice, which was my starting point for this quest? Or, even better, hitchhike to the galaxy, and listen to Deep Thought, who knows the right answer is: 42 (Adams 1986/2005: 119-120). My answer is: lived practice tries to square the circle of emergence. Mechanistic determinism is untenable, it excludes organisation, environment, and the subject (Morin 1990: 178). Studying complexity calls for changing from a knowledge production that has certainty as an object, towards knowledge production that has uncertainty as an object: 'the work with uncertainty invites complex thought, (…) it is about the inclusion of the observer in the observation' (ibid.: 191). Thus, event, phenomenon, lived practice and consciousness are reintroduced into knowledge.

At the end of this quest, I conclude that I have deepened my insight into complexity as marked by emergence, and I have experienced improved understanding of practice. The empirical thought experiment of thinking complexity is a learning process. It comes close to recursive, holographic dialogues seeking emergent coherence. I enjoyed sharing with you what I have learned during the past decade about emergence as a constitutive force. I will let the finishing (as the opening) word of 'Solace in Complexity' to Edgar Morin and Hugo Letiche & Michael Lissack, my principal navigators while sailing between Scylla and Charybdis of Complexity (italics are added by me):

'Here we arrive at the complexus of the complexus, to this nucleus in a sort of a way, of the complexity in which the complexities meet. At first glance complexity arrives as fog, as confusion, as uncertainty, as incompressible algorithm, logical incomprehension, and irreducibility. It is an obstacle, it is a challenge. Then, when one moves forward in these avenues of complexity, one realises that there are two linked nuclei, an empirical nucleus, and a logical nucleus. The empirical nucleus comprises, on the one hand, disorders, and hazards, on the other hand, complications, entanglements, and proliferative multiplications. The logical core is, on the one hand, the contradictions that we must necessarily face, and, on the other, the internal undecidabilities to logic. Complexity seems negative or regressive since it is the reintroduction of uncertainty into a knowledge that triumphantly set off to the conquest of absolute certainty. We must absolutely regret this. *But the positive aspect, the progressive aspect that might have the answer to the challenge of complexity, is the departure for multidimensional thinking*' (Edgar Morin 1990: 175*).*

&

'When managers learn to rely on models and rationality, they also learn to discount stories and emotions (that are not so easily described in term of rationality and linearity). When managers believe that the world is best dealt with through compartmentalization (reductionism), they tend to think that it is OK to deny the reality of interrelationships (or of the multiplicity of interpretations that situatedness acknowledges). When managers learn that abstract quantitative models contain "truth", they are taught that truth does not include a notion of individuality, weak signals, embodiment, or context. Managers learn these lessons not only over the one- or two-year period when they are in business school but continually in the "managerial environment" surrounding them. In simplistic formal models, *managers find solace*, *protection from unpredictability, and an excuse not to think*' (Hugo Letiche and Michael Lissack with Ron Schultz 2011: 78).

I hope, that my invitation to find *Solace in Complexity*, has not left you untouched, bearing in mind the appeal of Andy Stirling (2010): Keep it Complex!

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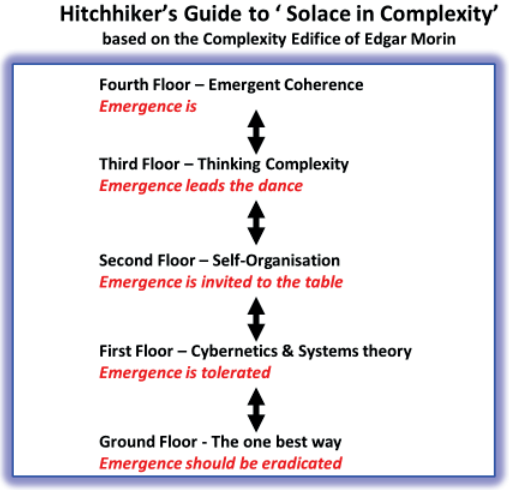
Summary

This book researches and elaborates on social complexity marked by emergence. Emergence is a key quality of complexity. Emergence is difficult to understand: in practice and theoretically. The problem is that there is a fundamental epistemological paradox involved in 'understanding' emergence. Understanding normally implies one graspable truth or definition, and/or a solution; while 'emergence' connotes radical otherness – i.e. something that arrives or comes that was not there before and could not be linearly predicted. Emergence refers to radical novelty. I believe these problems undermine the efforts to understand organisation and/or organising as really, ultimately, always, emergent. Thus, my first assumption: organisation and/or organising is emergence; organisational studies are the study of emergence. And because of organisational studies study emergence badly, try to ignore and/or deny it, organisational studies make a mess of it - i.e. the use of an inadequate and false epistemology dooms the field (research) to inaccurate, incomplete, and inadequate thought. At most, mainstream organisational studies address complicatedness, which tries to domesticate emergence – i.e. tries to make it a predictable entity, which is a contradiction in terms. Here another paradox is introduced: most mainstream management textbooks start and end with the observation that the world they try to describe is complex. Managers, governors, politicians, scholars, and policymakers repeatedly state that the issue at hand is complex while acting as if it is a complicated problem. The distinction between complicatedness and complex is relevant. Emergence respects ambiguity, uncertainty, indeterminacy, disorder, paradox, historical process, and ongoing contextualisation; complicatedness (simplicity) largely denies these qualities. The book is structured around the complexity edifice of Edgar Morin and adds another provisional floor to this edifice (see figure). The central theme in this edifice is emergence.

I set off to ground my understanding of social complexity theory in the tradition from which it comes, i.e. the thought of the French thinker and researcher Edgar Morin. Specifically, I wanted to see what organisational studies would look like when it was (re-) interpreted from a position aligned to Morin. And to see how the Letiche & Lissack book panned out when examined from a position aligned to Morin. Edgar Morin's life work, his multi-volume Method (1977-2004), is more epistemological than applied; while Letiche & Lissack is more applied than epistemological. Thus, my pursuit of the dialogues between the two. My leading research question is as follows: *"Does the dialogic*

square offer adequate and appropriate means for acknowledging emergence (as understood in social complexity theory by Morin and Letiche & Lissack) in organisation and/or organising?"



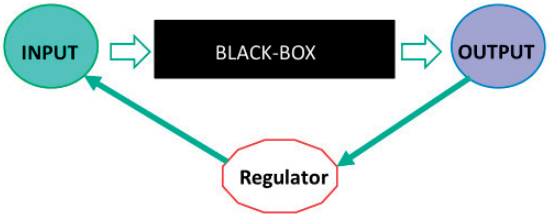
At the end of this book, you should understand how Letiche & Lissack have radicalised Morin, and why social complexity theory --- from Morin to Letiche & Lissack --- is crucial to organisational studies and practice. I have made the argument theoretically, but also by applying and controlling the ideas via two cases, one artistic and one organisational. I identify Morin with analysis by trilemmas and Letiche & Lissack with analysis by the four-fold dialogic square. While Morin makes attention to complexity's most crucial quality, emergence, visible; the dialogic square I believe more radically and completely opens the path to the acknowledgement of emergence. I propose to see Letiche & Lissack as a further step in the direction taken by Morin --- so to speak as a fourth level in addition to the third level (above the first level of positivism and the second level of interpretivism) Morin has added to the investigation. This book is a theoretical investigation of (social) complexity ideas and their applications, which moves backward towards theoretical origins and forwards towards much-needed applications. In sum, the book opposes the complexity dialogues between Morin and Letiche & Lissack to the worldview of simplicity that denies uncertainty, indeterminacy, ambiguity, and paradox, in short, the fundamental complexities of the everyday (of organisation and/or organising). Complexity marked by emergence should be considered as the most fundamental and unmet challenge of management (studies).

Morin's Complexity Edifice is a hitchhiker's guide to different theoretical concepts that are developed in the context of thinking complexity (see figure above). The ground floor, which consists of the mechanistic worldview of Taylorism is complexified by first-order systems theory (see figure below). The concept of feedback loops breaks open

the closed order of the ground floor by introducing a two-fold logic of 'either-or'. A simplification that we can observe in the central concept of the simplicity paradigm, which informs the dominant management discourse: the 2x2 Matrix. The 2x2 Matrix is composed of two dilemmas, setting up analysis in four quadrants. There is only room for two opposing factors and/or ideas.

Simple contextualisation, through opposition, only allows for dualism. This means that context is not emergent but pre-given, which leads to the blindness of repetition and sameness in analysis and action that is observed in Ralph Stacey's vicious circle of the dominant management discourse.

First order organisation systems theory



In sum, first-order systems theory largely denies emergence. The black box is filled with different mainstream management recipes that are largely based on the two-fold logic of dualism. Recipes that are incapable of coping with complexity simply because they are rooted in the notion of ascribed coherence (labels) as an input and output signal, which are linked with each other by external auditing through feedback. The observer (e.g. the manager) is neatly separated from the observed, asserting that emergence can be controlled. On the second floor, the question is raised: what is really going on in the black box? This initiates the complexifying move towards second-order systems theory, which prioritises the organising concept of self-organisation. Emergence is invited to the table. I will discuss and problematise this concept. It is an old tradition in management sciences to introduce concepts from the natural sciences. Self-organisation is one of them. The concept of self-organisation is founded on nonlinear deterministic modelling. The translation problem is partly raised by the metaphorical nature of self-organisation (butterfly effect), and aggregation level differences between self and organisation, which are ignored. What might work in the experimental context of the computer simulation (the lab), cannot, unproblematised, be translated into the real world. Self-organisation is then presented as a two-fold logic about Self and Organisation. In this logic, self-organisation can be understood as self-generating and independent of self. Self-organisation

then lacks reflexivity and consciousness – i.e. self-organisation is primarily determined by organisational process, i.e. self that is organised by organisation.

Self and organisation should be understood at different aggregation levels according to Morin and Letiche & Lissack. In Morin's self-eco-[re-]organisation concept, a three-fold logic is introduced, whereby the dualism of self-organisation is complexified. This move liberates the self-organisation concept of its dualistic footing, therefore making room for reflexivity, strong contextualisation, and awareness. Letiche & Lissack complexify Morin's trilemma Self-Eco-Organisation by relating processes between these three factors to a fourth factor: emergence. Both Morin and Letiche & Lissack relate various factors (self, organisation, environment) to dialogic, emergent relations that are complementary, contradictory, and opposing. The move towards the third and fourth floor of Morin's complexity edifice is made possible through the generation of complexity principles that (might) create better awareness of emergent processes.

Edgar Morin follows a three-fold logic (trilemma) discussing complexity theory. In his six-volume study (La Méthode/Method), he develops a new vocabulary and concepts about complexity. A scientific worldview that opposes the dominant paradigm of simplicity. The paradigm of simplicity proposes a reduction of complex realities to one principle of order, which only has room for the 'either-or' nature of reality that is represented as a dichotomy (thesis versus antithesis). In this paradigm, there is a separation between subject and object, a separation between micro and macro, a separation between theory and practice, and between laboratory experiment and the real world. Simplicity also has a bias towards probabilities versus possibilities and a bias towards objectivity and universality. Simplicity makes a coercive disjunction between that which is connected (reductionism) and connects coercively diversity (holism).

Complexity can be characterised by three underlying principles according to Morin. Firstly, through a dialogic principle: order and disorder, self and environment deny each other, but they also collaborate to produce organisation and complexity. The second complexity principle involves the principle of (organising) recursivity: a process in which the products and effects are at the same time the causes and producers of what they produce. Society is produced by interactions between individuals, but society, once produced, feeds back to the individuals and produces them. Morin thus breaks open linear causality, which marks simplicity. The third principle is a holographic principle. The parts are in the whole and the whole is in the parts, but they are irreducible to each other. Simplicity only looks at parts, isolated from their context (reductionism), while holism only looks at the whole, without paying attention to the parts. The principle of holographic structure is linked to the principle of recursive causality, which is linked to the dialogic principle of interaction between order and disorder.

The four-fold logic of Letiche & Lissack, conceptualised in the semiotic/dialogic square of Self and World, tries to reveal emergent processes by providing a guide for active dialogues that respects lived or experienced narrative – i.e. to put lived speech (parole) in the foreground. The dialogic square of Self-Group-Environment-Emergence adds a fourth factor to Morin's trilemmas, and thus complexifies them further. I focus in this book on two important complexity concepts of Letiche & Lissack that relate to emergence: coherence, and the dialogic square of Self and World as a research framework, which tries to enhance our understanding of emergence. The dialogic square of Self and World is a guide, in which four factors (labels), which are constructed in a way that depends on the issue that is studied, are brought into dialogue through three different complex relationships: complementary, contradictory, and opposing. The dialogic square tries to make sense of emergent, situational occurrences. Using the dialogic square allows us to create complex narratives on the issue that is studied.

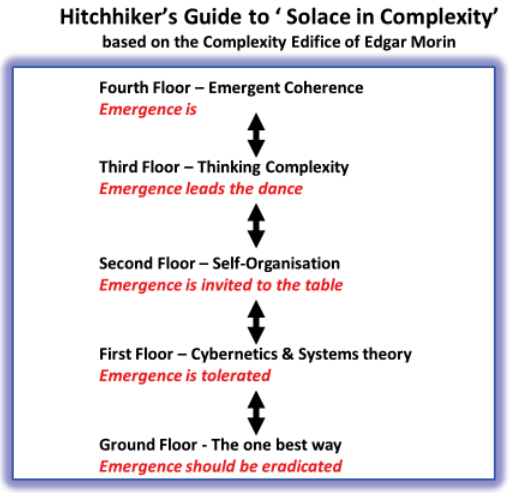
I have distilled four, interrelated, process conditions for coping with complex issues from my research: 1. *Dialogic Interaction* (underlining the importance of narrative and storying about the complex relations between self, group, environment, and emergence); 2. *Recursive Causality* (moments of antagonism and paradox make room for novelty in organisation and/or organising, and create awareness of adjacent possibilities); 3. *Holographic Structure* (difference in aggregation levels can make room for emergent coherence in organisation and/or organising) and 4. *Ecology of Action* (this principle refers to the complex relations between intentions and actions).

Emergence is irreducible to complicatedness; emergence is about relatedness and the stories told about relatedness. Emergence has no end-state, there is no solution to emergence, but analysing emergent processes can offer adjacent affordances to act upon. Researching organisation and/or organising, these guiding principles can provide a coherent framework, which can be helpful to create awareness for emergent processes.

Samenvatting

Dit boek onderzoekt en werkt sociale complexiteit, die gekenmerkt wordt door emergentie, uit. Emergentie is een kernkwaliteit van complexiteit. Emergentie is zowel in de praktijk als theoretisch moeilijk te begrijpen. Het 'begrijpen' van emergentie stelt de onderzoeker voor een fundamentele epistemologische paradox. Begrijpen impliceert normaal gesproken één grijpbare waarheid of definitie dan wel een oplossing, terwijl 'emergentie' radicale diversiteit impliceert. Dat wil zeggen iets dat zich openbaart dat niet verklaarbaar is uit de vorige toestand, en derhalve niet lineair voorspelbaar is. Emergentie refereert aan radicale nieuwheid. Ik denk dat deze problemen de inspanningen ondermijnen om organisatie en/of organiseren te begrijpen als uiteindelijk altijd emergent. Hieruit volgt mijn eerste veronderstelling: organisatie en/of organiseren *is* emergent; organisatorische studies zijn de studie van emergentie.

Organisatiestudies bestuderen emergentie grotendeels oppervlakkig. In de heersende stroming van organisatiestudies wordt emergentie genegeerd dan wel ontkend, kortom maken organisatiestudies er een warboel van - d.w.z. het toepassen van een inadequate en onjuiste epistemologie overschaduwt het (onderzoek)veld en dit leidt tot onnauwkeurig, onvolledig en inadequaat denkwerk over organisatie en/of organiseren. Hoogstens richt het dominante organisatiediscours zich op ingewikkeldheid, dat emergentie probeert te domesticeren - d.w.z. dat het dominante organisatiediscours van emergentie een voorspelbare entiteit tracht te maken, wat een innerlijke tegenspraak is. Hiermee wordt een andere paradox geïntroduceerd: de meeste reguliere management(hand)boeken beginnen en eindigen met de observatie dat de wereld die ze proberen te beschrijven complex is. Managers, bestuurders, politici, wetenschappers en beleidsmakers beweren herhaaldelijk dat het probleem waar ze voor gesteld staan complex is, en handelen vervolgens alsof het een ingewikkeld probleem is. Het verschil tussen complexiteit en ingewikkeldheid is relevant. Emergentie respecteert ambiguïteit, onzekerheid, onbepaaldheid, wanorde, paradox, historisch proces en doorgaande contextualisering; ingewikkeldheid (simpliciteit) ontkent deze kwaliteiten grotendeels. Het boek is gestructureerd rondom het complexiteitsgebouw van Edgar Morin en voegt daar een nieuwe, voorlopige, vierde verdieping aan toe (zie figuur). Het centrale thema in dit gebouw is emergentie.



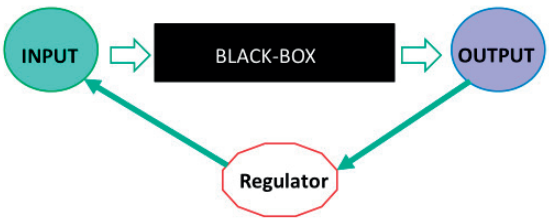
Het vetrekpunt van mijn onderzoek, om mijn begrip van sociale complexiteitstheorie verder te ontwikkelen, was een terugkeer naar de bron, de denktraditie waar deze uit voortkomt, d.w.z. de theoretische concepten van de Franse denker en onderzoeker Edgar Morin. Hoe ziet organisatietheorie eruit als deze (her)geïnterpreteerd wordt vanuit Morin's positie en perspectief? Daarnaast onderzoek ik hoe de sociale complexiteitsconcepten en het onderzoekskader (het dialogische vierkant) van Letiche & Lissack behulpzaam kunnen zijn in mijn praktijk als organisatieonderzoeker en- adviseur, door deze in dialoog te brengen met de theoretische concepten van Morin. Het levenswerk van Edgar Morin, zijn zesdelige 'La Méthode' (1977-2004), is meer epistemologisch van aard dan toegepast; terwijl de conceptualisatie van sociale complexiteit door Letiche & Lissack meer toegepast dan epistemologisch van aard is. Vandaar mijn streven om Morin en Letiche & Lissack in dialoog te brengen. Mijn leidende onderzoeksvraag luidt als volgt: *"Biedt het dialogische vierkant voldoende en geschikte toepassingen voor het erkennen van emergentie (zoals begrepen in de sociale complexiteitstheorie door Morin en Letiche & Lissack) in organisatie en/of organiseren?"*

Aan het einde van dit boek kan de lezer begrijpen hoe Letiche & Lissack de concepten van Morin geradicaliseerd hebben, en waarom sociale complexiteitstheorie --- van Morin tot Letiche & Lissack --- cruciaal is voor organisatiestudies en de praktijk. Ik heb deze stellingname enerzijds theoretisch onderbouwd, en anderzijds in de praktijk getoetst via twee cases. Ik beschouw Morin's theoretisch concepten als een analyse die gebruik maakt van een drievoudige logica gevat in trilemmas, en de conceptualisatie van Letiche & Lissack als een analyse die geschraagd wordt door de viervoudige logica van het door hen ontwikkelde dialogische vierkant. Terwijl Morin de aandacht vestigt op de meest cruciale kwaliteit van de complexiteit, namelijk emergentie, ben ik van mening dat het dialogische vierkant radicaler en vollediger de weg vrijmaakt voor een

erkenning van emergentie in de praktijk. Letiche & Lissack hebben een vervolgstap gezet in de door Morin aangegeven richting, zogezegd als een vierde niveau naast het derde niveau (boven het eerste niveau van positivisme en het tweede niveau van het interpretatieve discours), die Morin heeft toegevoegd aan complexiteitonderzoek. Dit boek is een theoretisch onderzoek van (sociale) complexiteitsideeën en hun toepassingen, dat enerzijds terugkeert naar de theoretische oorsprong van complexiteittheorie en anderzijds een stap vooruit zet naar de broodnodige toepassingen. Kortom, het boek zet de complexiteitsdialoog tussen Morin en Letiche & Lissack tegenover het wereldbeeld van simpliciteit dat onzekerheid, onbepaaldheid, ambiguïteit en paradox, kortom de fundamentele complexiteit van het alledaagse (van organisatie en/of organiseren) ontkent. Complexiteit gekenmerkt door emergentie moet worden beschouwd als de meest fundamentele en verwaarloosde uitdaging van management (studies).

Morin's complexiteitsgebouw is een 'hitchhiker's guide' voor verschillende theoretische concepten die zijn ontwikkeld in de context van het denken van complexiteit (zie bovenstaande figuur). De begane grond, die bestaat uit het mechanistische wereldbeeld van het Taylorisme, is gecomplexificeerd door eerste orde systeemtheorie (zie onderstaande figuur). Het concept van feedbacklussen breekt de gesloten orde van de begane grond open door een tweevoudige logica van 'of-of' te introduceren. Een vereenvoudiging die we waarnemen in het centrale concept van het simpliciteitsparadigma, dat het dominante managementdiscours schraagt: de 2x2 Matrix. De 2x2 Matrix bestaat uit twee dilemma's waarbij de analyse in vier kwadranten wordt opgedeeld. Er is in deze opzet alleen ruimte voor twee tegengestelde factoren en/of ideeën.

First order organisation systems theory



Beperkte contextualisatie via oppositie laat alleen dualisme toe. Dit betekent dat de context niet emergent is maar van tevoren wordt vastgesteld, hetgeen leidt tot de blindheid van herhaling en eentonigheid in de analyse en daaruit voortkomende actie. Ralph Stacey's vicieuze cirkel van het dominante managementdiscours toont dit op elegante wijze. Kortom, eerste orde systeemtheorie ontkent grotendeels emergentie. De blackbox is gevuld met verschillende standaard managementrecepten die zich voornamelijk

baseren op de tweevoudige logica van het dualisme. Recepten die niet in staat zijn om met complexiteit om te gaan, simpelweg omdat ze geworteld zijn in het concept van geattribueerde coherentie (labels) omschreven in een invoer- en uitvoersignaal, die met elkaar verbonden zijn door externe audits door middel van feedback.

De waarnemer (b.v. de manager) is netjes gescheiden van het waargenomen object, en houdt staande dat emergentie kan worden gecontroleerd. Op de tweede verdieping rijst de vraag: wat speelt zich af in de zwarte doos? Deze vraag initieert de complexificerende beweging naar tweede orde systeemtheorie die prioriteit geeft aan het organiserende concept van zelforganisatie. Emergentie wordt aan tafel uitgenodigd. Ik zal kort stilstaan bij dit concept. Het is een oude traditie in de managementwetenschappen om concepten uit de natuurwetenschappen over te nemen. Zelforganisatie is daar een voorbeeld van. Het concept van zelforganisatie is gebaseerd op niet-lineaire deterministische modellering. Het vertaalprobleem wordt mede veroorzaakt door de metaforische aard van zelforganisatie (vlindereffect) en aggregatieniveauverschillen tussen zelf en organisatie, die worden genegeerd. Wat zou kunnen werken in de experimentele context van de computersimulatie (het laboratorium), kan niet, zonder problemen, worden vertaald naar de echte wereld. Zelforganisatie wordt vervolgens gepresenteerd als een tweevoudige logica over Zelf en Organisatie. In deze logica kan zelforganisatie worden opgevat als zelfgenererend en onafhankelijk van het zelf. Zelforganisatie mist dan reflexiviteit en bewustzijn - d.w.z. zelforganisatie wordt primair bepaald door het proces van de organisatie, oftewel het zelf dat georganiseerd wordt door de organisatie. Morin en Letiche & Lissack stellen dat zelf en organisatie op verschillende aggregatieniveaus begrepen moeten worden.

In Morin's zelf-eco-[re-]organisatieconcept wordt een drievoudige logica geïntroduceerd, waarbij het dualisme van zelforganisatie wordt gecomplexificeerd. Deze denkbeweging bevrijdt het zelforganiserende concept van zijn dualistische basis, waardoor ruimte wordt gemaakt voor reflexiviteit, krachtige contextualisatie en bewustzijn. Letiche & Lissack complexificeren het trilemma Zelf-Eco-Organisatie van Morin door processen, tussen deze drie factoren, te koppelen aan een vierde factor: emergentie. Zowel Morin als Letiche & Lissack relateren verschillende factoren (zelf, organisatie, omgeving) aan dialogische, emergente relaties die complementair, tegenstrijdig en tegengesteld zijn. De overgang naar de derde en vierde verdieping van het complexiteitsgebouw van Morin wordt mogelijk gemaakt door het genereren van complexiteitsprincipes die een beter bewustzijn (kunnen) creëren van emergente processen.

Edgar Morin volgt een drievoudige logica (trilemma) waarin hij complexiteitstheorie bespreekt. In zijn zesdelige studie (La Méthode) ontwikkelt hij een nieuw vocabulaire en concepten over complexiteit. Een wetenschappelijk wereldbeeld dat zich verzet tegen het dominante paradigma van simpliciteit. Het simpliciteit paradigma stelt zich ten doel om complexe werkelijkheden tot één beginsel van orde te reduceren, dat alleen

ruimte biedt aan de 'of-of' aard van de werkelijkheid die wordt gerepresenteerd als een dichotomie (these versus antithese). In dit paradigma wordt een scheiding tussen subject en object, een scheiding tussen micro en macro, een scheiding tussen theorie en praktijk, en tussen laboratoriumexperiment en de echte wereld aangebracht. Simpliciteit wordt gekenmerkt door een voorkeur voor waarschijnlijkheden versus mogelijkheden en een voorkeur voor objectiviteit en universaliteit. Simpliciteit maakt een dwingende scheiding tussen dat wat verbonden is (reductionisme) en verbindt dwangmatig diversiteit (holisme). Complexiteit kan volgens Morin worden gekenmerkt door drie onderliggende principes.

Ten eerste, een dialogisch principe: orde en wanorde, zelf en omgeving ontkennen elkaar deels, maar ze werken ook samen om organisatie en complexiteit te produceren. Het tweede complexiteitsprincipe omvat het principe van (organiserende) recursiviteit: een proces waarbij de producten en effecten tegelijkertijd de oorzaken en producenten zijn van wat ze produceren. De samenleving wordt geproduceerd door interacties tussen individuen, maar de samenleving koppelt, wanneer ze eenmaal is geproduceerd, terug op de individuen en produceert hen. Morin doorbreekt zodoende het principe van lineaire causaliteit dat simpliciteit kenmerkt. Het derde principe is een holografisch principe. De delen zijn onderdeel van het geheel en het geheel zit in het deel, maar ze zijn onherleidbaar tot elkaar: de delen geven geen volledige verklaring van het geheel, noch dat het geheel een volledige verklaring geeft van de delen. Simpliciteit kijkt alleen naar delen, geïsoleerd van hun context (reductionisme), terwijl holisme alleen naar het geheel kijkt, zonder aandacht te schenken aan de delen. Het principe van de holografische structuur is gekoppeld aan het principe van recursieve causaliteit, dat weer gekoppeld is aan het dialogische principe van interactie tussen orde en wanorde.

De viervoudige logica van Letiche & Lissack, die in het semiotische/dialogische vierkant van Zelf en Wereld is geconceptualiseerd, tracht emergente processen bloot te leggen. Het dialogische vierkant van Zelf en Wereld biedt een gids voor een actieve dialoog die het geleefde of ervaren narratief, van de deelnemers aan die dialoog, respecteert – d.w.z. door spreektaal (parole) op de voorgrond te plaatsen. Het dialogische vierkant van Zelf-Groep-Omgeving-Emergentie voegt een vierde factor toe aan de trilemmas van Morin, waardoor deze trilemmas verder gecomplexificeerd worden. Ik concentreer me in dit boek op twee belangrijke complexiteitsconcepten van Letiche & Lissack die betrekking hebben op emergentie: coherentie en het dialogische vierkant van Zelf en Wereld als een onderzoekraamwerk dat ons begrip van emergentie probeert te vergroten.

Het dialogische vierkant van Zelf en Wereld is een gids, waarin vier factoren (labels) in relatie met elkaar worden gebracht, afhankelijk van de bestudeerde kwestie. Deze factoren worden in dialoog gebracht via drie verschillende complexe relaties: complementair, tegenstrijdig en tegengesteld. Het dialogische vierkant probeert betekenis

te geven aan emergente, situationele gebeurtenissen. Met behulp van het dialogische vierkant kunnen we complexe narratieven creëren over de spelende kwestie.

Ik heb vier, onderling samenhangende, procescondities gedistilleerd uit mijn onderzoek voor het omgaan met complexe vraagstukken: 1. *Dialogische Interactie* (het onderstrepen van het belang van het narratieve en verhalende karakter van de complexe relaties tussen zelf, groep, omgeving en emergentie); 2. *Recursieve Causaliteit* (momenten van antagonisme en paradox bieden ruimte aan nieuwheid in organisatie en/of organiseren, waardoor bewustzijn van aangrenzende mogelijkheden wordt gecreëerd); 3. *Holografische Structuur* (verschil in aggregatieniveau biedt ruimte aan emergente coherentie in organisatie en/of organiseren) en 4. *Ecologie van Actie* (dit principe refereert aan de complexe relaties tussen intenties en handelen).

Emergentie is onherleidbaar tot ingewikkeldheid; emergentie gaat over verwantschap en de verhalen die verteld worden over die verbondenheid. Emergentie kent geen eindstaat, er is geen oplossing voor emergentie, maar de analyse van emergente processen kan aangrenzende mogelijkheden voor handelen bieden om het handelen op te baseren. Bij het onderzoeken van organisatie en/of organiseren, kunnen deze leidende principes een samenhangend kader bieden dat nuttig kan zijn om bewustzijn te creëren voor emergente processen.

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About the Author

Albert Cath is 30 years active as a self-employed organisational researcher, consultant, and initiator in the context of public and private organisations. My primarily fields of activity encompass(ed) organisations that operate in the following domains: Water Management, Traffic and Transport, Climate Change and Sustainability Business, Healthcare, the Cultural Sector, Industry (R & D) and Knowledge-based Institutes (especially boundary organisations between science and policy). I lecture part-time International Business Administration (IBA) at the American University of Paris (France). I teach courses in management and organisational behaviour, international business, leadership, strategy, business ethics and global sustainability management (Climate Change).

My research and consulting practice involve the understanding of complex thinking and coping with complex issues (social complexity theory). The inherent complexity of an issue is for me a starting point in the problem-solving, instead of reducing the issue, as often happens to top-down blueprints. The still dominant paradigm of Simplicity in organisational studies imply a violent separation (disjunction) between that what is connected and unifies coercively that what is diverse (reduction). This starting point has at least three implications in the design, reflexivity and the (re)search for problem-solving directions: introducing a plurality of perspectives, co-framing through stakeholder's participation and stimulating 'self-eco-[re-]organisation', as an expression of 'bottom-up' processes at the crossroads between society, organisation, the individual and knowledge. I also teach part-time at the Conservatoire National des Arts et Métiers (CNAM) in Paris and give guests lectures at several Dutch universities. Furthermore, I have designed and facilitated a myriad of workshops for the public and the private sector.

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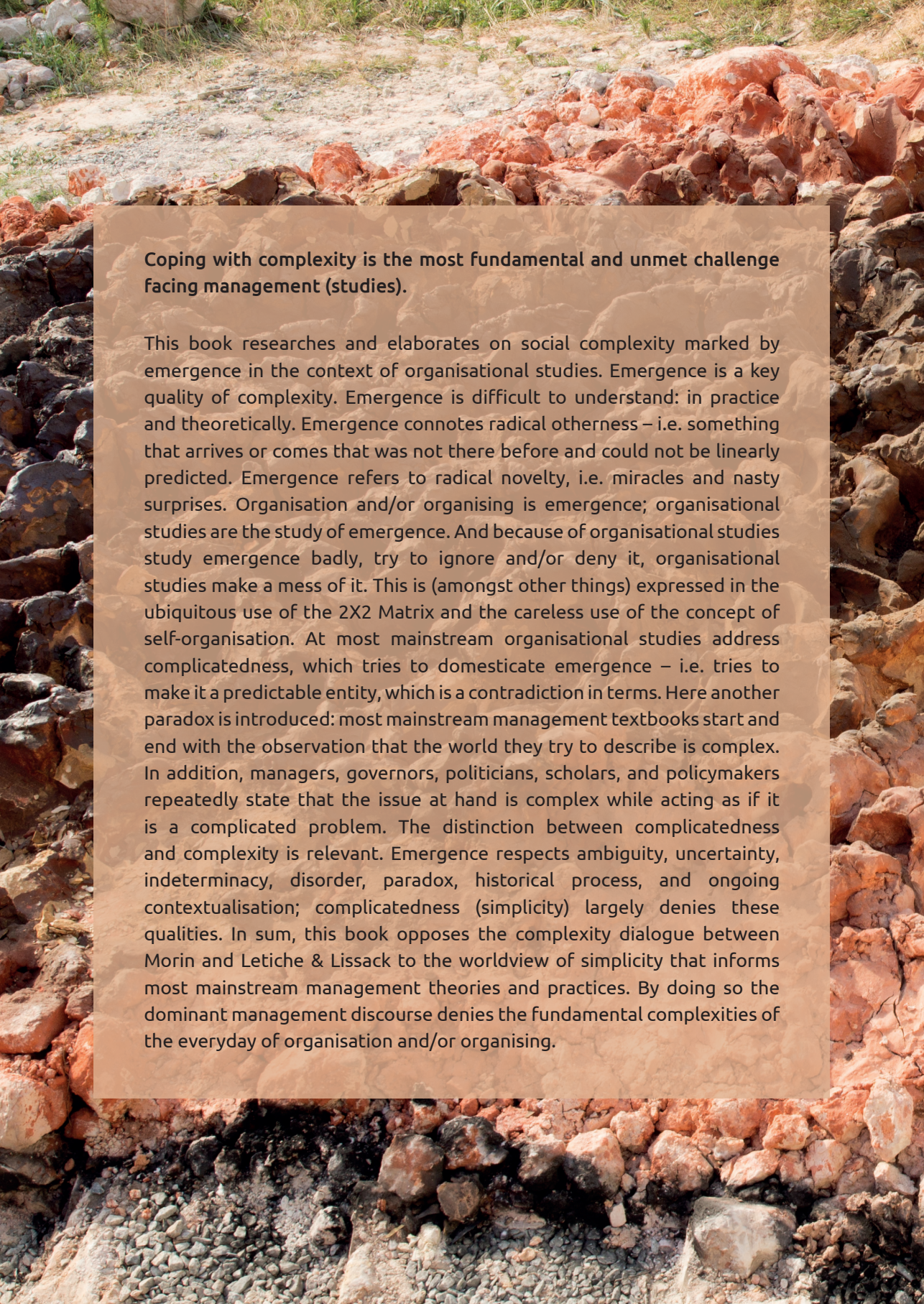

Coping with complexity is the most fundamental and unmet challenge facing management (studies).

This book researches and elaborates on social complexity marked by emergence in the context of organisational studies. Emergence is a key quality of complexity. Emergence is difficult to understand: in practice and theoretically. Emergence connotes radical otherness – i.e. something that arrives or comes that was not there before and could not be linearly predicted. Emergence refers to radical novelty, i.e. miracles and nasty surprises. Organisation and/or organising is emergence; organisational studies are the study of emergence. And because of organisational studies study emergence badly, try to ignore and/or deny it, organisational studies make a mess of it. This is (amongst other things) expressed in the ubiquitous use of the 2X2 Matrix and the careless use of the concept of self-organisation. At most mainstream organisational studies address complicatedness, which tries to domesticate emergence – i.e. tries to make it a predictable entity, which is a contradiction in terms. Here another paradox is introduced: most mainstream management textbooks start and end with the observation that the world they try to describe is complex. In addition, managers, governors, politicians, scholars, and policymakers repeatedly state that the issue at hand is complex while acting as if it is a complicated problem. The distinction between complicatedness and complexity is relevant. Emergence respects ambiguity, uncertainty, indeterminacy, disorder, paradox, historical process, and ongoing contextualisation; complicatedness (simplicity) largely denies these qualities. In sum, this book opposes the complexity dialogue between Morin and Letiche & Lissack to the worldview of simplicity that informs most mainstream management theories and practices. By doing so the dominant management discourse denies the fundamental complexities of the everyday of organisation and/or organising.